

AMERICAN SOCIETY OF CIVIL ENGINEERS

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SOCIETY AFFAIRS

J. WALDO SMITH, HONORARY MEMBER

The election of an Honorary Member is an exceptional occasion. It is almost impossible for the Society to say too much of its sentiment for, and appreciation of, the recipient of its highest honor. On the presentation of honorary membership to J. Waldo Smith, M. Am. Soc. C. E., it was the privilege of Clemens Herschel, Past-President, Am. Soc. C. E., himself an Honorary Member, to express so clearly the general feeling of engineers, that his remarks are repeated here in full:

"MR. PRESIDENT, FELLOW MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS:

"Six years ago, he who now addresses you had the great distinction of being received by our Society as an Honorary Member. The member who then made the introductory address, was none other than my former assistant in much engineering work, who now in turn stands before you, to be introduced as an Honorary Member of the Society. It is with supreme pleasure that I enter upon this exhibition of 'turn about,' as being 'fair play'.

"You have long known him, and of him, and there is little need for a lengthy recital of the work of this our honored fellow member.

"Of sterling New England stock; trained as a child in that best of schools of thrift and upright living, a dour New England farm; at Phillips Andover Academy; at the Massachusetts Institute of Technology; I had him as an assistant in my duties as Hydraulic Engineer of the Holyoke Water Power Company in the Eighties. When in 1889 I came to New York and New Jersey, Waldo Smith was

one of some twenty employees of various grades whom I had the privilege to bring with me. In all, our connection lasted fourteen consecutive years.

"Next of note followed his employment to finish the work on and about the Croton Dam of the New York Water Supply, which had gotten into a not unheard-of political state of innocuous desuetude—a state that held it, as the occupant of a sick bed who was never to get well. Waldo Smith finished that work with neatness and despatch.

"It was but natural, therefore, when New York then entered upon the construction of its great Ashokan Water Supply, that this same able engineer should be charged with its design and construction. Of this work I can speak in no finer terms than those used by the Western Society of Engineers, when in 1925 it conferred on Waldo Smith its Washington Award. As stated by that Society the award was given:

"For Preeminent Services in
Promoting the Public Welfare;
and for the Rare Combination
of Vision, Technical Skill,
Administrative Ability,
and Courageous Leadership,
in Engineering."

"Think of the bold design of treating the Hudson River above West Point as though it were a mere scratch upon the surface of the earth; which again has logically led to a repetition of the same idea in the city tunnel under Manhattan Island, and with respect to the East River, in the design of the \$70 000 000 tunnel to carry Brooklyn's supply of water from Yonkers to that Long Island City. Verily, if in the transmutation of

human affairs New York City should one day pass away, and the remains of these works should be viewed by descendants of ours, 4 000 or 5 000 years from now, they would say, as did the ancients of the works of their predecessors, 'There were giants in those days'.

"But there is another feature in the work of Waldo Smith for New York City, of peculiar gratification to me who contributed to it, by transplanting him into this vicinity. It is the sterling honesty of purpose and of action with which his public work has invariably been conducted. He has left a broad trail of ability, efficiency, and of duty well done in public work, in New York City; an environment which tests its engineers as though by fire, not only in technical integrity, but also in great steadfastness of character and of upright action.

"Mr. President and Fellow Members; I present to you J. Waldo Smith, Honorary Member of the American Society of Civil Engineers."

MOVIES OF STEVENSON CREEK DAM

Recently the Society has received from Engineering Council a gift of two reels of standard motion picture films depicting experimental work done on the Stevenson Creek Arch Dam. These "movies" show the general conditions of the site of the dam, the methods of installing instruments, and a general summary of the results. They have already been shown in several parts of the United States, but if there are still some Local Sections which have not had the privilege of reviewing this great experiment "in action", so to speak, the Society will be very glad to loan the films for a meeting program.

A CHANGE IN THE CALENDAR

Radical as it may seem to a great many people, the agitation for a marked alteration in the arrangement of calendar days per month, and months per year, is growing steadily. Various ideas and suggestions are more or less familiar through the efforts of the daily press. Admittedly, the transitional period between the abandonment of the old system and the complete assimilation of some new one will be a trying experience, but the advocates of a change declare that the advantages will outweigh the difficulties.

The subject now becomes somewhat more than a philosophical abstraction to members of the Society through the act of the National Committee on Calendar Simplification for the United States in asking the Society for its opinion in the matter and its answer to certain questions. It was explained that the immediate purpose was to study the calendar situation by means of a country-wide investigation and to embody its conclusions in a report to be submitted to the Secretary of State.

The immediate object of this National Committee was to obtain support for its contention that the United States should participate in international deliberations looking toward a revision. By official action of the Board of Direction on January 15, 1929, approval of such Government participation was voted.

ALFRED NOBLE MEMORIAL

In its final form the Alfred Noble Memorial makes provision for a prize of \$600 to \$700 to be awarded annually to the young man who submits the most meritorious paper on a technical subject. He must be a member of one of the Four Founder Societies or the Western Society of Engineers and must be not more than 30 years of age.

The original plan was to create a Board consisting of representatives from each Society to administer the Fund. By the generous suggestion of the other groups interested, the Society has been asked to serve as administrator which duty has been accepted on behalf of the Society by the Board of Direction. Those who are interested in the Memorial may write to the Society for any further information.

APPOINTMENTS OF SOCIETY REPRESENTATIVES

Among the various recent appointees to represent the Society are the following:

Society Representative at the Centenaire de L'Ecole Centrale des Arts et Manufactures, Paris, France, May 26-28, 1929: Charles E. d'Ornellas, M. Am. Soc. C. E.

Committee on Engineering Employment in Public and Quasi-Public Offices: E. P. Goodrich, *Chairman*, A. B. McDaniel, W. F. Reeves, and Arthur Richards, Members, Am. Soc. C. E., and E. O. Griffenhagen, Assoc. M. Am. Soc. C. E.

ENGINEERING FOUNDATION AS A JOINT RESEARCH ORGANIZATION

In the forthcoming issue of the Society Year Book for 1929 will be found a full description of the Engineering Foundation and its relation to the Society. Great things can be accomplished by concerted action, and in this respect the Founder Societies have established in it a joint organization of a great potential value.

Much of its special work and that of Engineering Societies Library is made possible by gifts from individuals. There devolves on the members of each of these Societies the duty to make its work known wherever it may have effect. The Library has been enriched from time to time by the gifts of rare books and, in some cases, private engineering libraries. There may be others who would want to make available to a larger group valuable books of engineering interest. Engineering Foundation expects, from time to time, to receive financial assistance from men with the ideals and the prophetic foresight that characterized its benefactors of the past.

DEFINITIONS OF SANITARY ENGINEERING TERMS

The Society has recently mailed to each of its members a blue-covered pamphlet entitled "Definitions of Terms used in Sewerage and Sewage Disposal Practice". This is the second of the Manuals of Engineering Practice issued by the Society in conformance with its stated publication policy. Manual No. 1 was entitled "A Code of Practice".

The present booklet, which contains 321 definitions, is far from being a hasty compilation assembled from questionnaires mailed broadcast at random. It represents the careful and joint action of a Committee of the Sanitary Engineering Division of the Society, collaborating with the American Public Health Association. It is the culmination of a study that has been carried on aggressively since 1916 by engineers and public health experts pre-eminently well qualified to accomplish the work expected of them. The report embodying these definitions

was accepted by the Board of Direction at the Buffalo, N. Y., Meeting on July 16, 1928.

JUST RECOGNITION FOR ENGINEERS

Members of the Profession are having less cause each year to complain of an attitude of indifference on the part of the public toward the Civil Engineer. His work is being recognized and acclaimed now as never before.

Of special significance in this respect is the action of The Society of Arts and Sciences (New York) in awarding medals to four engineers and honorable mention to three, as a recognition of good work done in constructing the Bronx River Parkway in Westchester County, New York. The medals were awarded at a dinner in the Hotel Astor, New York City, on January 24, 1929.

The following members of the Society were among those honored: Jay Downer (gold medal); Leslie G. Holleran (silver medal); Chester A. Garfield (bronze medal); and Arthur G. Hayden (bronze medal). In making the award, the Society of Arts and Sciences declared itself in the following significant language:

"Medals and other honors without end are lavished upon painters and sculptors whose creations adorn the walls and corridors of museums and private collections for the privileged few to see.

"In our opinion the men who metamorphosed a menacing sewer into a Parkway are entitled to at least the same recognition and honor. They have painted and moulded a living masterpiece in Nature's own materials to inspire in countless millions the emotions which consummate beauty alone can give.

"We believe the world should pay its tribute of honor to such men in the hope that it will stimulate a desire in the hearts of men to emulate their example in conserving the beauty of Nature for the uplift of Man."

A description of the Westchester County Park work, with photographs of the Bronx River Parkway, will be found elsewhere in this issue of *Proceedings* under the heading of the Meeting of the City Planning Division, January 17, 1929.

Annual Business Meeting of the Society

Morning Session

The Sixty-Seventh Annual Meeting of the Society was called to order at 10:20 A. M., January 16, 1929, President Lincoln Bush presiding. Following various reports, including those of the Board of Direction,* the Secretary,† and the Treasurer,‡ the ceremony of conferring Honorary Membership on J. Waldo Smith, M. Am. Soc. C. E., was performed. Mr. Smith was presented by Clemens Herschel, Hon. M. Am. Soc. C. E., who in a few reminiscent remarks§ described the outstanding accomplishments of Mr. Smith. In response, after receiving the certificate, Mr. Smith expressed his gratitude to the Society.

A number of medals and prizes were next presented, the winners and their introducers being conducted by William G. Atwood, M. Am. Soc. C. E., as Marshal. In receiving the Norman Medal for his paper "Storage Required for the Regulation of Stream Flow", Charles E. Sudler, M. Am. Soc. C. E., was presented by Eugene E. Halmos, M. Am. Soc. C. E. The Thomas Fitch Rowland Prize was bestowed on Roderick B. Young, Testing Engineer, Hydro-Electric Power Commission of Ontario, Toronto, Ont., Canada, for his paper "Producing Concrete of Uniform Quality"; Mr. Young was presented for this prize by A. N. Talbot, Hon. M. Am. Soc. C. E. The James Laurie Prize was for the paper by James F. Case, M. Am. Soc. C. E., entitled "The Ancient Roman Aqueduct at Athens". In Mr. Case's absence, he was represented by Peter Junkersfeld, M. Am. Soc. C. E., who was presented by Paul G. Brown, M. Am. Soc. C. E. The Arthur M. Wellington Prize was bestowed on Royal G. Finch, M. Am. Soc. C. E., for his paper "The New York State Barge Canal and Its Operation"; Mr. Finch was presented by Edward H. Sargent, M. Am. Soc. C. E. The Collingwood Prize for Juniors was presented to Franklin Hudson, Jr., Assoc. M. Am. Soc. C. E., for his paper "The Design, Construction, and Operation of a Small Sewage Disposal Plant"; he was presented for this honor by Charles A. Howland, Assoc. M. Am. Soc. C. E.

On motion, it was voted to extend an expression of appreciation on the part of the Society to Charles Evan Fowler, M. Am. Soc. C. E., for his generous endowment of three awards, The Phebe Hobson Fowler Professional Award, the Phebe Hobson Fowler Award in Architecture, and the Phebe Hobson Fowler Scholarship in Engineering Architecture. A similar motion of appreciation was voted to John R. Freeman, Past-President, Am. Soc. C. E., for his establishment of the Freeman Fund to encourage hydraulic research and to finance traveling scholarships.

For the Alfred Noble Memorial Fund, Robert Ridgway, Past-President, Am. Soc. C. E., reported that, originally, the fund amounted to about \$15 000 (340 contributors) and at present contains, with compounded interest, about \$17 500. It is proposed that this Fund be used to establish prizes for young

* See Society Affairs, p. 69.

† *Loc. cit.*, p. 88.

‡ *Loc. cit.*, p. 87.

§ *Loc. cit.*, p. 51.

engineers. This was approved by the Annual Meeting of 1928 and has since received the sanction of other Founder Societies, and the Western Society of Engineers, all of which were interested in the Fund. At their request, it is to be administered by the Society. On motion, the report was approved and, with the request that the Committee be discharged, was referred to the Board of Direction with power.*

Tellers appointed to canvass the ballot for Officers for 1929, which vote was canvassed on January 11, reported the choice of the following candidates by large majorities: For President, Anson Marston; for Vice-President, Zone II, Arthur James Dyer; Zone III, Alonzo John Hammond; for Director, District No. 3, George Harvey Norton; District No. 5, Frank Lee Nicholson; District No. 7, Ralph Budd; District No. 8, Alfred Ferdinand Reichmann; District No. 9, Clyde Tucker Morris; and District No. 12, Joseph Jacobs.*

Dean Marston was escorted to the platform by George S. Davison and A. N. Talbot, Past-Presidents, Am. Soc. C. E., and presented to the meeting. After expressing his gratitude and his high regard for the Society, the new President presented to Retiring President Lincoln Bush the gavel, suitably inscribed, which had been used by him during the preceding year. Colonel Bush replied briefly, and the meeting was adjourned for lunch on the Fifth Floor.

Afternoon Session

Reconvening at 2:40, the meeting was called to order by President Marston. He presented Mr. Arthur W. Beresford who, as President of American Engineering Council, took this occasion to express his gratification at the decision of the Society to affiliate with Council.

Special opportunity was offered to several of the important Society Committees to report on their recent accomplishments. The first was by Clyde T. Morris, M. Am. Soc. C. E., speaking as Chairman for the Special Committee on Concrete and Reinforced Concrete Arches.† Next in order was the Special Committee on Steel Column Research,‡ represented by F. E. Turneure, M. Am. Soc. C. E., Chairman. These were progress reports. Another Committee report was by Almon H. Fuller, M. Am. Soc. C. E., as Chairman of the Special Committee on Impact in Highway Bridges.§ This was the final report of the Committee.

Still another phase of the afternoon session comprised reports by several Technical Divisions, under the general heading of "Status and Progress in the Art." First in order was one covering City Planning,|| presented by C. E. Grunsky, Past-President, Am. Soc. C. E., Chairman of the City Planning Division. Mr. Grunsky quoted from a more lengthy report written by Stephen Child, M. Am. Soc. C. E.

* See Society Affairs, p. 63.

† See Papers and Discussions.

‡ *Proceedings*, Am. Soc. C. E., February, 1929, Papers and Discussions, p. 357.

§ See Papers and Discussions.

|| *Loc. cit.*

The report on Highway Engineering* was presented by H. K. Bishop, M. Am. Soc. C. E., Chairman of the Highway Division, who took excerpts from a more complete statement prepared by Henry B. Drowne, M. Am. Soc. C. E. In Waterways Engineering,† George B. Pillsbury, M. Am. Soc. C. E., Chairman of the Waterways Division, presented its findings. The last report was on the topic of Irrigation Engineering,‡ and was offered by F. H. Tibbetts, M. Am. Soc. C. E., who gave the gist of a full report written by S. T. Harding, M. Am. Soc. C. E.

The remaining event on the program was the showing of motion picture films, dealing with scenes of general and engineering interest in Japan, especially as they related to the coming World Engineering Congress to be held in Tokyo in the fall of 1929. Following the showing of these excellent pictures, the Annual Meeting was adjourned.

* See Papers and Discussions.

† *Loc. cit.*

‡ *Loc. cit.*

Business Meetings of Technical Divisions

City Planning Division

The meeting of the City Planning Division was called to order, on January 17, 1929, by Chairman C. E. Grunsky, who requested that in memory of the late Secretary, Charles B. Ball, M. Am. Soc. C. E., the audience stand for a moment in silent respect.

After brief announcements from the Chair, R. V. Black, Assoc. M. Am. Soc. C. E., was called upon to report for the Committee on Classification. This Committee, according to Mr. Black, had made a canvass of members of the Section as to their special interest in the phases of planning. Out of total replies of more than 1000 in number, the preferences expressed were as follows: Streets and thoroughfares, 320; general interest, 94; regional planning, 68; railroad transportation and terminals, 62; traffic control, 55; education and city planning, 55; water-front development, 40; street railways and transit, 36; water transportation and terminals, 28; housing, 24; development at Washington, D. C., 14; recreation facilities, 10; and physical condemnation, 1.

The new Executive Committee of the Division was announced as follows: Messrs. Stephen Child, Edward M. Noyes, John Nolen, C. O. Sherrill, and C. E. Grunsky.

Structural Division

At the meeting of the Structural Division on January 17, 1929, Chairman J. J. Yates announced the Executive Committee for the ensuing year, formed under the new by-laws, to include the following members: Messrs. G. E. Beggs, to serve one year; A. G. Hayden, to serve two years; V. G. Thomassen, to serve three years; J. J. Yates, to serve four years; and D. B. Steinman, the newly elected member, to serve five years.

An interesting model in brass was demonstrated by Leon S. Moisseiff, M. Am. Soc. C. E. The purpose was to verify certain facts of behavior in a long-span, steel arch, proposed to be even longer than the present record of 17.65 ft. at Sydney, New South Wales, Australia. Mr. Moisseiff explained some of the details of the model itself. Members later had a chance to examine it more in detail at an exhibition in the Museum of Peaceful Arts.

Meetings of the Board of Direction

This is an abstract of the notes of the Secretary and subject to approval by the Board of Direction at its next meeting.

The Board met at Society Headquarters on January 14, and 15, 1929; President Lincoln Bush in the chair; George T. Seabury, Secretary; and present, also, Messrs. Bell, Brillhart, Davison, Dennis, Dougherty, Dufour, Eddy, Fowler, Fuller, Hammond, Hatton, Hill, Hoyt, Johnston, Knowles, Lucas, Morgan, Pirnie, Ray, Sawyer, and Taber.

Annual Report of Board of Direction

On motion, the Annual Report of the Board* was presented, and adopted.

Approval of Minutes of Board of Direction

The minutes of the meetings of the Board held on October 1 and 2, and December 3, 1928, were approved.

Approval of Minutes of Executive Committee

The minutes of the meeting of the Executive Committee held on December 17, 1928, were approved, and the actions outlined therein were adopted as the actions of the Board, with the exception of certain recommendations which were acted on separately.

Discharge of Committees

On the recommendation of the Executive Committee the following committees were discharged: Special Committee on Flood Protection Data; Special Committee on Hydraulics Phenomena; Special Committee on Impact in Highway Bridges; and Society representation on the Joint Committee on Specifications for Concrete and Reinforced Concrete.

Phebe Hobson Fowler Awards

The Board expressed its appreciation to Charles Evan Fowler, M. Am. Soc. C. E., for the time, effort, and expense he had contributed to develop the Medallions and Certificates for the Phebe Hobson Fowler Professional and Engineering Architecture Awards and also voted to give him the first plaques struck and copies of each of the Certificates.

Registration of Engineers

The following resolution with respect to registration of engineers was adopted:

"Whereas, laws in regard to registration of engineers have been enacted in twenty-four States; and

* See Society Affairs, p. 69.

"Whereas, other States are considering legislation leading to the registration of engineers; and

"Whereas, such laws apply to engineers both resident and non-resident in these States and that, therefore, so far as possible, such laws should be uniform throughout all the States in the Union; and

"Whereas, the American Society of Civil Engineers has already prepared and published a Model Registration Law; and

"Whereas, said Model Registration Law has been adopted by the National Council of State Boards of Engineering Examiners;

"Therefore, the Board of Direction of the American Society of Civil Engineers instructs its Committee on Registration to direct its efforts to bring about a general uniformity of the engineer registration laws in those States where they are in effect and in such other States where and when the Legislatures thereof propose to adopt engineer registration laws."

Re-organization of Committee on Registration of Engineers and of Student Chapters

It was decided that hereafter the Committee on Registration of Engineers shall consist of five Corporate Members, one a member of the Board of Direction to be appointed annually to serve for one year, and four others, the first appointments to be for terms of four, three, two, and one years, respectively, after which appointments shall be for the term of four years, the Chairman to be appointed by the Board and preferably not to be the member from the Board. Similarly, it was decided to re-organize the Committee on Student Chapters on the same basis.

Committee on Districts and Zones

On motion, the report of the Committee on Districts and Zones as approved at the October, 1928, Board meeting was re-affirmed.

Committee on Technical Expansion

The final report of the Committee on Technical Expansion was presented and discussed. That portion having to do with Quarterly Meetings was referred to the Committee on Meetings and Publications and another item with reference to Technical Division organization was referred to the Technical Procedure Committee.

Style of Publications

The following recommendation with respect to style of publications was adopted:

"In Society publications 'each statement shall be condensed to the fewest words and shall be accompanied by the least number of minimum sized illustrations practicable' and 'the same matter shall not be stated by more than one of the methods of expression: Type printing, tables, or illustrations. The Society publications are not a place for verbosity, either in method of expression or in exposition of minute or distantly related details. Their fundamental purpose is a presentation of a main idea and enough detail to enable a trained leader to assure himself of its soundness. The publications are to be neither a popular discourse on the one hand, nor a complete manual of data on the

other; but are to set forth in concise form a thesis and only sufficient data to prove that thesis to an audience capable of understanding it. Authors should prepare papers in this attitude and the editorial staff should redraft with this objective in view papers otherwise prepared. Publications have become so large that economy of space has become necessary; but moreover they should exhibit a practical demonstration of clarity in writing."

The following statements with reference to Engineering Research and Funds for Research were adopted at the San Diego Meeting of the Board, and included in the final report of the Committee:

Engineering Research

"The extent to which it is desirable for the Society to deal with research and the nature of such dealings seems in need of clarification, at least from the viewpoint of Society administration.

"Engineering research may be viewed as an organized, carefully conducted effort to obtain engineering facts related to definite problems and, as a Society activity, the consideration of problems proposed for research may be classified or subdivided as follows: Preliminary Study, Investigation, or Project.

"No research on any problem shall be undertaken without a clear written description of its purpose and application. Questions which arise as to the proper classification or disposition of a proposed research problem shall be decided by the Board of Direction.

"A Preliminary Study consists of the assembling of existing knowledge, including a search of the literature and the collection and compilation of available existing data, or the recording and compilation of data that may be made available in the conduct of actual engineering operations. There should result from a Preliminary Study a statement of the engineering facts obtained and a program for an Investigation or Project if either or both should appear to be justified. Preliminary Studies should be carried on in general by Committees of the Technical Divisions.

"An Investigation supplements a Preliminary Study and consists of such laboratory or experimental work designed to reduce the indeterminates to a minimum and attempting to elicit information on particular elements of design, the program being of such a nature that it can be completed in reasonable time at moderate cost, and will determine the engineering facts desired, or will be introductory to a Project. In the latter case, the further work essential to an adequate consummation of the Project should be clearly described and defined. Investigations should be carried on in general by committees of the Technical Divisions, or by special committees of the Society.

"A Project supplements a Preliminary Study and an Investigation, and may include experiment, test, or demonstration. It requires a hired staff and exceptional facilities for effective prosecution. Projects may be carried on by special committees of the Society or by joint committees representative of the interested parties. They may be carried on chiefly by outside agencies.

"Before an Investigation or a Project shall be authorized, a clearly outlined program or description, with estimates of cost, personnel, and available facilities, shall be prepared and presented to the Committee on Research, for review and recommendation. After submission by the Committee on Research to the Board of Direction, and upon authorization, the work shall go forward promptly and economically under the general guidance of the Committee on Research. Before any material change is made in the program of a Project, it shall be reviewed by the Committee on Research, which shall report thereon, with recommendations, to the Board of Direction for authorization of such change.

"Every research, whether a Preliminary Study or an Investigation or a Project, shall be adequately described in a written report, the character of

which may be technical or administrative, or both. The technical report may be published without review by the Committee on Research. The administrative report, in so far as it describes and recommends further work, shall be forwarded to the Committee on Research, which shall report its recommendations to the Board of Direction.

"An administrative report upon proposed further work should state definitely: (a) A clear description or program of the work recommended; (b) the theoretical lines to be followed; (c) the agency to be employed; (d) the men best adapted to carry on the work; (e) the cost and time necessary for completion of the work; (f) the results to be expected; and (g) the parties most interested in the results and the practicability of obtaining the necessary financial support.

"All reports and information obtained shall be exclusive property of the Society or societies represented on the committee, until published. Committees shall report at least once each year on technical matters and upon the management of their work, directly, or through the Committee on Research, to the governing bodies of the societies by which they were appointed."

Funds for Engineering Research

"Request for funds to carry on a preliminary study of a research problem should be incorporated in the Technical Division Budget as forwarded to the Board of Direction of the Society by the Executive Committee of that Division not later than November first of each year.

"Requests for funds for the development of an investigation of a research problem should be transmitted with a suitable outline of the proposed work to the Committee on Research not later than July first and by the Committee on Research to the Board of Direction of the Society with specific recommendations, not later than November first of each year.

"Requests for funds to assist in carrying on a research project should be transmitted with a complete outline of the proposed work to the Committee on Research not later than July first and by the Committee on Research on or before November first to the Board of Direction of the Society with specific recommendations as to the extent to which the Society should participate, if at all, in financing the project."

Appointment and Supervisory Control of Special Committees

The following recommendation of the Committee with reference to the Appointment and Supervisory Control of Special Committees was adopted at the San Diego Meeting:

"All Special Committees shall be appointed by the President of the Society. The number of members appointed on each committee shall be, in general, not more than five and preferably not more than three.

"The supervisory control of all Special Committees shall be in the hands of the Executive Committee of the Board of Direction of the Society which Committee shall have power to discipline or discharge any such committee for inadequate performance of its duties."

American Engineering Council

On motion, the following resolution was adopted with respect to affiliation with American Engineering Council:

"Whereas, the membership of the American Society of Civil Engineers through a referendum has voted to authorize the Board of Direction to join American Engineering Council when and after certain revisions in the Constitution of Council had been made; and

"Whereas, the Assembly of Council has made the revisions suggested (with two or three minor alterations) and final ballots will undoubtedly be in accordance;

"Be it Resolved, that the Board of Direction authorize and direct the President and Secretary to initiate at the proper time the necessary proceedings, that the Society may have membership in American Engineering Council."

National Hydraulic Laboratory

On motion, the following resolution with respect to a National Hydraulic Laboratory was adopted:

"Whereas, there are expended annually in the United States, many millions of dollars in the construction of engineering works financed and controlled by private interests, which are dependent on water for their successful operation; and

"Whereas, knowledge in regard to the behavior of water in connection with structures is necessary for the proper and economic design, construction, and operation of these works; and

"Whereas, experience in this country and in European countries has demonstrated that information of the greatest value with respect to the action of water in its relation to structures can be obtained by means of laboratory experiments, whereby the public will eventually save large amounts of money; and

"Whereas, laboratory facilities for such experiments are not now available; and

"Whereas, the Senate passed on April 13, 1928, a bill, S-1710, 70th Congress First Session, authorizing the establishment of a National Hydraulic Laboratory in the Bureau of Standards of the Department of Commerce and the construction of a building therefor; and

"Whereas, this bill reached the House of Representatives and on April 17 was referred to the Committee on Rivers and Harbors; and

"Whereas, the Director of the Bureau of the Budget has reported that the proposed legislation does not conflict with the financial program of the President; and

"Whereas, the Bureau of Standards is the recognized Government agency for the conduct of experimental work and is so equipped that it can readily extend its activities to provide for a hydraulic laboratory;

"Now Therefore Be It Resolved, That the Board of Direction of the American Society of Civil Engineers, representing over 13 500 engineers of the United States, who are directly interested in a National Hydraulic Laboratory as an important aid in the economic development, operation, and control of the Nation's water resources, does hereby urge the importance of the establishment of such a laboratory in the Bureau of Standards and requests the Committee on Rivers and Harbors to make a favorable report on this bill to the end that it may be enacted into law; and

"Resolved, that a copy of these resolutions be transmitted to the President of the United States, the President of the Senate, the Speaker of the House of Representatives, and to each member of the Committee on Rivers and Harbors."

Florida Section

A Local Section to be known as the Florida Section was authorized.

Meeting of the Incoming Board, January 17, 1929

The incoming Board met at Society Headquarters, on January 17, 1929; President Anson Marston in the chair; George T. Seabury, Secretary; and present, also, Messrs. Bell, Brillhart, Bush, Dennis, Dufour, Dyer, Eddy, Fowler, Fuller, Hammond, Hill, Johnston, Knowles, Lucas, Morris, Nicholson, Norton, Pirnie, Ray, and Reichmann.

Budget for 1929

The Budget for 1929, as recommended by the outgoing Board, was considered and approved.

Alfred Noble Memorial

The following report from the Alfred Noble Memorial Committee, was adopted:

"January 12, 1929

"TO THE MEMBERS OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS:

"At the Annual Meeting of the American Society of Civil Engineers on January 18, 1928, approval was given to a report of the Alfred Noble Memorial Committee dated January 7, 1928, which, in brief, recommended that the fund in hand be set up as a trust the interest of which should be used each year as a prize for the most meritorious paper or other expression submitted in turn by members of each of the four Founder Societies and of the Western Society of Engineers. The report further recommended that the plan be submitted to the above mentioned societies for approval; and that inquiry be made of the contributors to the Alfred Noble Memorial Fund as to their willingness that their contributions, originally intended as a memorial in the form of a fountain, be made use of as a memorial in the above described form of a prize. The report concluded with a request that your Committee be instructed as to the disposition of the funds in hand and that it thereupon be discharged.

"There have been 340 contributors to the fund in the amount of \$17 584.05, and of these, three, who had given a total of \$80.00, have asked that the money be returned to them, and this has been done. There are only seven others who have not signed releases. One of these is the Society itself which contributed \$1 000 in cash in 1914, \$1 200 to the sculptor in 1917, \$1 022.75 in expenses between 1917 and 1927, and certain additional expenses in the past year in connection with the releases. Of the others, there is one contribution of \$500 and five of a total amount of \$55, for which releases have not yet been secured.

"Against the contributions there have been expenses for the sculptor, for issuing the appeals, for securing the releases, etc., such that the net amount in the account with interest to January 16, 1929, will be \$16 002.72 as indicated on financial statement.

"In consideration of the foregoing, and in order that the new form of memorial may go into effect as soon as possible thereby serving to perpetuate the memory of the life and work of Alfred Noble, it is recommended:

"That your Committee be authorized to turn over to the Society the funds which it has in its custody, in two parts: First, those contributions for which

release has been secured, and, in addition, the various contributions of the Society, to establish the Trust Fund for the Memorial as now proposed; and, second, those contributions for which release has not been secured to be held as a special trust fund until such time as releases are obtained or some other method found of closing the account; and

"That your Committee be thereupon discharged."

"Respectfully submitted,

SAMUEL REA, *Chairman.*"

Standing Committees of the Board

The following Standing Committees for 1929 were appointed:

Executive Committee.—Anson Marston, *Chairman*; Lincoln Bush, *Vice-Chairman*; George W. Fuller, Harrison P. Eddy, and G. J. Ray.

Technical Procedure Committee.—Anson Marston, *Chairman*; F. H. Fowler, Morris Knowles, George W. Fuller, Clyde T. Morris, the Chairmen of the nine Technical Divisions of the Society, and George T. Seabury, *Secretary*.

Committee on Meetings and Publications.—George W. Fuller, *Chairman*; F. O. Dufour, Harrison P. Eddy, Morris Knowles, and Malcolm Pirnie.

Public Relations Committee.—A. J. Hammond, *Chairman*; Ralph Budd, Harrison P. Eddy, A. J. Dyer, and L. C. Hill.

Honorary Membership Committee.—Anson Marston, Lincoln Bush, A. J. Dyer, George W. Fuller, A. J. Hammond, L. C. Hill, and John F. Stevens.

Committee on Local Sections.—F. H. Fowler, *Chairman*; Malcolm Pirnie, and A. F. Reichmann.

Committee on Professional Conduct.—A. J. Hammond, *Chairman*; H. W. Dennis, and Morris Knowles.

Committee on Research.—Clyde T. Morris (representative from Board), *Chairman* (1 year); R. W. Crum (3 years), T. Chalkley Hatton (3 years), Milo S. Ketchum (1 year)*, Thaddeus Merriman (2 years)*, W. A. Slater (2 years)†, and A. N. Talbot (1 year)*.

Committee on Districts and Zones.—H. W. Dennis, *Chairman*; F. L. Nicholson, and G. H. Norton.

* Unexpired terms.

† Vice Clyde T. Morris unexpired term.

Local Sections*

Cleveland.—December 13, 1928. A special dinner meeting of the Section was held at the Cleveland Chamber of Commerce in the Terminal Tower Building in honor of President Bush and Secretary Seabury. Mr. Seabury gave a description of the travels of Colonel Bush and himself throughout the United States during 1928, at which time they attended the various meetings of the Society and visited many Local Sections. Colonel Bush then described the construction work on the Tunkhannock Viaduct, illustrating his talk with lantern slides. Attendance 54.

January 8, 1929. This was a luncheon meeting, at which various local business matters were transacted and committee reports presented. Attendance 15.

Connecticut.—January 11, 1929. A dinner meeting of the Section was held at the Graduates' Club, in New Haven. A delegate was appointed to the next meeting of the New England Council, after which the meeting adjourned to Mason Laboratory, Yale University, where the evening session was resumed as a joint meeting with the Connecticut Section of the American Institute of Electrical Engineers, the New Haven Branch of the American Society of Mechanical Engineers, and the Yale Student Chapter of the Society. The principal speaker was E. E. Minor, General Manager of the New Haven Water Company, who chose as his subject "The Development of the New Haven Water Supply System". Mr. Minor illustrated his address with lantern slides showing progress of the construction work on the North Branford project. Gen. Sanford H. Wadhams, Chairman of the State Water Commission, then spoke briefly on the water problems of Connecticut. The attendance at the dinner was 14 and at the joint meeting, 75.

District of Columbia.—February 2, 1929. Following a dinner served at the Annual Meeting of the Section held at the Washington Hotel, the following officers were elected for 1929: President, Edwin W. James; Vice-President, John B. Gordon; and Secretary-Treasurer, William H. Richards, Jr. The speakers of the evening were the Hon. William P. MacCracken, Jr., Assistant Secretary for Aeronautics, Department of Commerce, and Charles W. Upham, Business Director, The American Road Builders' Association. The Section numbered among its guests of honor, the Hon. R. W. Dunlop, Assistant Secretary of Agriculture, Professor H. S. Jacoby of Cornell University, Mr. B. Okazaki, of Japan, and Secretary Seabury.

Georgia.—January 17, 1929. The regular meeting of the Section was held at the Atlanta Athletic Club, in Atlanta. Various business matters were transacted, after which interesting talks, accompanied by moving pictures, were given by Messrs. L. F. Lufburrow, State Forester, and C. B. Beal, who are conducting a Southern Forestry Educational program in the interest of "Reforestation". Attendance 27.

Kansas (State).—January 18, 1929. At a recent meeting of the Section held in the Green Room of the Innes Tea Room, at Wichita, it was decided

* For list of Local Section Officers, Rules, etc., see 1928 Year Book, p. 46.

that a committee be appointed to revise the Constitution. A committee was also appointed to nominate the officers for the ensuing year. Attendance 17.

Los Angeles.—The following officers of the Section have been elected for 1929: President, Walter E. Jessup; First Vice-President, A. F. Barnard; Second Vice-President, Edward R. Bowen; Secretary, Ormond A. Stone; Treasurer, Roy L. Anderson; and Past-Presidents, H. A. Van Norman and R. V. Orbison.

January 9, 1929. A novel feature of this meeting was a brief address on "The Philosophy of Life" delivered by Dr. Walter Dexter, President of Whittier College, at Whittier, Calif. The technical paper for the evening was presented by Leon T. Eliel, Pacific Coast Representative of the Fairchild Aerial Surveys. Mr. Eliel gave a short historical sketch of the development of aviation and explained in detail the various methods now used in mapping by the aerial method.

Nashville.—At a recent meeting of the Section the following officers were elected for 1929: President, W. H. Schuerman; Vice-President, F. J. Lewis; Secretary-Treasurer, D. D. McGuire; and Directors, Hunter McDonald and C. Neil Bass.

North Carolina.—The following officers of the Section have been elected for the ensuing year: President, J. T. Chase; First Vice-President, Stanley H. Wright; Second Vice-President, H. E. Miller; and Secretary-Treasurer, Thorndike Saville.

Northeastern.—The following officers of the Section have been elected for the ensuing year: President, Richard K. Hale; and Secretary-Treasurer, Charles W. Banks.

Northwestern.—January 25, 1929. The Minnesota Student Chapter was the guest of the Section at a dinner meeting held in the Men's Union Building, at the University of Minnesota, Minneapolis, Minn. Mr. Whittaker, Director of the State Board of Health, gave an illustrated address describing the work of the State Board on the Twin City Metropolitan District Sewer Problem. Mr. J. A. Childs then spoke on the work of the Metropolitan Drainage Commission. He illustrated with slides various effects of the pollution of the Mississippi River by sewage, and told of the proposals of the Commission for the correction of these conditions. In conclusion, Mr. F. C. Shenehon discussed the subject from the economic standpoint. Attendance 71.

Philadelphia.—January 29, 1929. At a dinner meeting of the Section held at the Engineers' Club, Professor Willis A. Slater, Director of the Fritz Engineering Laboratory of Lehigh University, described the tests conducted on the Stevenson Creek Test Dam in California. Following this address which was illustrated by lantern slides, George E. Beggs, Associate Professor of Civil Engineering, Princeton University, and Lyle A. Whitsit, Hydraulic Engineer for the United Engineers and Constructors, Inc., discussed Professor Slater's paper. The attendance at the dinner was 86 and at the meeting, 115.

Rochester.—The following officers of the Section have been elected for 1929: President, Percy Waller; First Vice-President, A. Harold Metcalf;

Second Vice-President, C. Arthur Poole; Secretary-Treasurer, Robert B. Jeffers; and Junior Past-President, Willard F. Pond.

Sacramento.—December 4, 1928. W. H. Holmes, formerly Engineer for the Modesto Irrigation District, read a paper on "Drainage by Pumping". Attendance 30.

December 11, 1928. George G. Pollock, Representative of the Section on the Joint Committee on Dam Legislation, presented a progress report of that Committee and a draft of the proposed law. Motion pictures of heavy excavating machinery were shown. Attendance 39.

December 18, 1928. "The Life of O'Reilly", a thrilling drama dealing with the ethics of the profession as adapted to local conditions, was presented at the Annual Jinks held in the Hotel Sacramento. Messrs. G. F. Mellin, H. M. Stafford, S. H. Searancke, D. Butler, and W. E. Stoddard were the "actors". Attendance 45.

January 8, 1929. Professor Charles Derleth, Jr., Dean of the College of Civil Engineering of the University of California, and Consulting Engineer, gave an illustrated lecture on the "George A. Posey Tube" under the Oakland Estuary. Attendance 64.

January 14, 1929. At a special meeting of the Section, called for the purpose of discussion of the proposed law drafted by the Joint Committee on Dam Legislation, resolutions were adopted accepting the report, thanking the Committee for its work, and asking that the Committee continue in preparing a law that can be sponsored by all the California Sections. Attendance 27.

January 15, 1929. This was the Annual Meeting of the Section at which the following officers were elected for 1929: President, Joseph W. Gross; First Vice-President, Walter E. Stoddard; Second Vice-President, S. H. Searancke; Secretary, Norwood Silsbee. Written reports were received from all committees. The report of the Secretary-Treasurer showed that the Section had a membership of 77, and that the average attendance at the 51 meetings held in 1928 was 32.

January 17, 1929. The seventh annual dinner and dance of the Section was held at the Hotel Senator, at which the new officers were installed. Attendance 88.

San Diego.—The following officers of the Section have been elected for 1929: President, Paul R. Watson; Vice-President, W. W. Crosby; and Secretary-Treasurer, Harold A. Noble.

San Francisco.—The following officers of the Section have been elected for 1929: President, I. C. Steele; and Secretary-Treasurer, R. A. Monroe.

Toledo.—The following officers of the Section have been elected for the ensuing year: President, Archibald Gardner; First Vice-President, C. B. Patterson; Second Vice-President, A. S. Forster; and Secretary-Treasurer, George N. Schoonmaker.

Utah.—January 23, 1929. The Annual Meeting of the Section was held at the University Club in Salt Lake City. Vice-President Louis C. Hill, of the Society, spoke on the various discussions relative to requirements for mem-

bership given at the recent Annual Meeting, in New York, N. Y., and Director H. W. Dennis addressed the meeting on general Society affairs, with emphasis on some of the features of the Annual Meeting. Mr. G. H. M. Dorsey, of Los Angeles, Calif., was also a guest of the Section. The following officers were elected for 1929: President, George M. Bacon; First Vice-President, C. E. Painter; Second Vice-President, O. W. Israelson; and Secretary-Treasurer, A. B. Purton. Mr. George M. Bacon was elected as the Section representative on Engineering Council of Utah to succeed Mr. H. S. Kerr. Attendance 21.

Virginia.—January 25, 1929. At the Annual Meeting of the Section the following officers were elected for 1929: President, Henry G. Shirley; First Vice-President, F. F. Harrington; Second Vice-President, S. B. Williamson; Third Vice-President, C. W. Ogden; and Secretary-Treasurer, Albert C. Dunn. It was decided to continue for another year the practice of awarding a Junior Membership in the Society to the honored student in the graduating class of each of the engineering institutions in Virginia. The technical program was held jointly with the Virginia Section of the American Society of Mechanical Engineers, the Southern Virginia Section of the American Institute of Electrical Engineers, and the Engineers' Club of Hampton Roads. The general subject of the meeting was "Aviation", to which the following speakers contributed: H. J. E. Reid, Engineer-in-Charge, N. A. C. A., who spoke on "The Organization and Functions of the National Advisory Committee for Aeronautics; Elton W. Miller, Chief, Aerodynamics Division, N. A. C. A., on "Equipment and Methods Used in Studying the Problems of Flight"; Thomas A. Carroll, Chief Test Pilot, N. A. C. A., on "The Difficulties Encountered and Problems to Be Solved in Location Airports"; Capt. W. J. Tate, on "Reminiscences of the Wright Brothers' Experiments at Kitty Hawk"; and Carlton Kemper, Power Plants Engineer, N. A. C. A., on "The Design and Development of Aircraft Power Plants", with films entitled "Kinematographic Studies in Aerodynamics", prepared by Baron C. Shiba, of Tokyo Imperial University. Following a dinner at which Professor W. S. Rodman, presided, A. P. Taliaferro, Jr., Airport Specialist, Airport Section, U. S. Department of Commerce, spoke on "The Work of the Department of Commerce in Fostering Civil Aeronautics", and E. B. Wadsworth, Superintendent, Air Mail Service, the U. S. Post Office Department, addressed the meeting on "Air Mail Service". Saturday morning was devoted to an excursion to Langley Field for the inspection of the N. A. C. A. Laboratories, after which luncheon was served.

Western Washington.—November 27, 1928. The regular monthly meeting of the Section was held at the Engineers' Club in the Arctic Building, Seattle, Wash. Mr. R. H. Ober, of the firm of Jacobs and Ober, presented an illustrated paper relative to the proposed high-level bridge, commonly referred to as the Stone Way Bridge, over the northwest arm of Lake Union, Seattle. A discussion of possible locations and routes and of various types of bridges followed. Attendance 86.

Annual Reports

ANNUAL REPORT OF THE BOARD OF DIRECTION FOR THE YEAR ENDING DECEMBER 31, 1928

In compliance with the Constitution, the Board of Direction presents its Report for the year ending December 31, 1928.

THE SEVENTY-SIXTH YEAR

This Report would fail of its function, at least in part, if it did not give prominence to a condition within the Society in the light of which practically all its affairs may be viewed. The past year is characterized by more than usual loyalty on the part of the members of the Society. Evidences of this loyalty are many.

At the Annual Meeting in January, of the sixteen living Past-Presidents there were present on the platform eleven at the moment when the outgoing President turned over the gavel to the newly elected President. At the meeting of the Board of Direction held at the time of the Annual Meeting last year, twenty-four of its twenty-five members were present and throughout the year there has been an average attendance of 84% of the membership at the Board meetings.

Loyalty to the Society is evidenced also by the general attendance at meetings. The Annual Meeting of 1928 had the maximum attendance in the history of such meetings, and, in contrast, the meeting at San Diego, Calif., held at a point quite other than central, brought together members from all parts of the Pacific Coast as well as many from the East.

Gifts

Loyalty has been exhibited also in the two generous gifts to the Society by John R. Freeman, Past-President and Charles Evan Fowler, Member, Am. Soc. C. E. Mr. Freeman's gift was made in 1924, and in 1927 and 1928 the income therefrom permitted the sending of three young men, each for a year's study in the hydraulic laboratories of Europe and will further provide for two similar traveling scholarships until the middle of 1929. Mr. Fowler's gift has endowed two prizes and made provision for a scholarship in a school of architecture.

These gifts and the participation by members in the discussion of Society papers and at the meetings are evidences of not only loyalty in the abstract but personal desire to be of specific service in Society activities. The opportunity offers to make further use of this general enthusiasm which certainly exists.

Membership

The Society has never undertaken any sort of a membership campaign. New members apply as the result of whatever contact may have called the Society to their attention, and, in the main, these contacts have been loyal and enthusiastic persons who are already members. Students recently graduated

who have applied may be credited to the loyalty of the professors and faculty sponsors, and there has resulted the largest increase of membership which the Society has ever experienced.

There were 1 242 persons added to the Society's membership this year: 579 Corporate Members, 653 Juniors, and 10 Affiliates. On the other hand there were losses. Deaths run about the same proportion year after year, though this year they have been more than usual, 142 in number, or a little more than 1% of the membership. Resignations have remained almost exactly the same number in each of the past five years, appreciably fewer than the few years preceding and at the gratifyingly small ratio of 58/100 of 1% of the entire membership in both 1928 and 1927. Those who have become delinquent and have been dropped—an unpleasant duty which the Board of Direction must perform if the Society is to be honest with itself and those who are supporting it—have totaled 129, a figure which is less than 1% of the total membership. The losses due to lack of interest are thus less than 2% of the membership, unless the loss of 72 Juniors who had reached the age limit without transferring should also be considered as indicating lack of interest. Thus, the total losses from all causes, including deaths, are only a little more than 3% of the membership. There has resulted a net increase of 820 members, also the largest in the history of the Society.

There has never been a year in the last sixty when the Society has not shown an increase in growth, but in the past three years, and more particularly in the year just passed, the increase has been greater than heretofore. These three years have resulted in a net increase of membership of 20 per cent. It is a significant fact that 3 361 new men have joined the Society in three years and that but 791 have left it for reasons other than death in that same period. One naturally thinks of the Society as having a fairly constant personnel, but these figures indicate a quite definite turnover and emphasize the fact that the Society, to be satisfactory to its membership, must live in the present quite as much if not more than in the past.

The turnover is definite but it is small in comparison with similar organizations and is rather an infusion of new blood than a general exchange of personnel. The presence in the Society now of newly elected members to a total of more than 3 000 and of Juniors to a total of 15% of the entire membership, is a proof of a new characteristic of the membership and the evidence of a note to which the Society's activities must be attuned in some measure.

Visits by the President

Undoubtedly the efforts made in late years by the succeeding Presidents of the Society to visit the Local Sections have been of great help in imparting a personality to the Society and its work. During the past year the President has been able to devote to this more time than it is logical to expect as a usual thing. He has visited the membership in thirty-five cities, making contacts with forty-seven groups of members and students.

Publications

Discussions in *Proceedings* indicate the interest of the members in the publications and their readiness to contribute to that phase of the Society's technical endeavors. Discussions of printed papers were contributed by 440 members, a number far in excess of other years.

A real effort has been made in 1927 and 1928 to incorporate in *Proceedings* as fast as practicable, the papers which had been accepted and had accumulated, unpublished. Accordingly, in these two years the regular *Proceedings* were increased in extent approximately 20 per cent. In addition, in 1928, there was published the Report on Arch Dam Investigation, 'with the result that *Proceedings* this year has been approximately 33% larger than the *Proceedings* of two years ago, themselves the largest to that date. The totals resulting from this increased output and from the increased edition, necessitated by the larger membership, run up into the impressive figure of 57 056 000 pages of *Proceedings* and 26 040 000 pages of *Transactions*, a total of 83 096 000 pages of printed matter. Withal it is a matter of satisfaction that through the initiation of economies the cost per printed page is as low as it was before the war, notwithstanding an 154% increase per hour in the union scale of printers' wages.

Federal Legislation

The Society this year has taken a more than ordinary part in Federal legislation. Pending legislation has been discussed and the Board of Direction in several instances has passed resolutions indicating treatment it felt to be highly desirable. These resolutions were presented to the President, the Congress, to officials, and were made use of in the presentation of arguments before Congressional Committees.

57th Street Property

Through a supplementary agreement made early in 1928, the Society's property on West 57th Street was subleased to the Frank G. Shattuck Company. Under the terms of the new agreement the Frank G. Shattuck Company becomes directly responsible to the Society for the principal tenant for a period of 21 years beginning on December 15, 1928. The Company, however, secured possession of the property on August 1, 1928, since which time the Society has been in receipt of net rent at the rate of \$52 500 per annum, an increase of \$29 796.68 per year over the rate of rental received since 1918, until recently.

MEETINGS OF THE BOARD OF DIRECTION

There have been seven meetings of the Board of Direction during 1928:

January 16-17, New York, N. Y.

January 19, New York, N. Y.

March 5, New York, N. Y.

April 23-24, Washington, D. C.

July 16-17, Buffalo, N. Y.

October 1-2, San Diego, Calif.

December 3, New York, N. Y.

There have been three meetings of the Executive Committee held in New York during 1928 as follows: April 9, August 28, and December 17.

MEMBERSHIP

The changes in membership are shown in the following table:

	JAN. 1, 1928.			JAN. 1, 1929.			LOSSES.				ADDITIONS.			TOTALS.		
	Resident.	Non-Resident.	Total.	Resident.	Non-Resident.	Total.	Transfer.	Resignation.	Dropped.	Died.	Transfer.	Election.	Reinstatement.	Loss.	Gain.	Increase.
Honorary Members.	4	11	15	5	11	16	.....	.....	.....	.....	1	.....	.....	.....	1	1
Members	951	4 449	5 400	971	4 582	5 553	1	15	38	104	150*	741	11	158	311	153
Associate Members.	967	4 707	5 674	1 009	4 863	5 872	158	40	85	32	86†	413	14	315	513	198
Juniors	303	1 219	1 522	400	1 591	1 991	85	21	74‡	4	.....	653	.....	184	653	469
Affiliates	54	85	139	54	84	138	2	3	4	2	.....	10	.....	11	10	‡
Fellows	4	3	7	4	3	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	2 283	10 474	12 757	2 443	11 134	13 577	246	79	201	142	246	1 217	25	668	1 488	820

* 158 Associate Members, 1 Affiliate.

† 85 Juniors, 1 Affiliate.

‡ Decrease.

§ 72 Juniors dropped on account of age limit.

New Members and Net Increase

The following table shows the new members and the net increase during the past ten years. The accompanying diagram gives membership statistics for the same period.

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
New Members*.....	687	887	743	636	733	715	795	1072	1139	1244
Net Increase.....	475	499	435	246	320	262	111	721	755	820

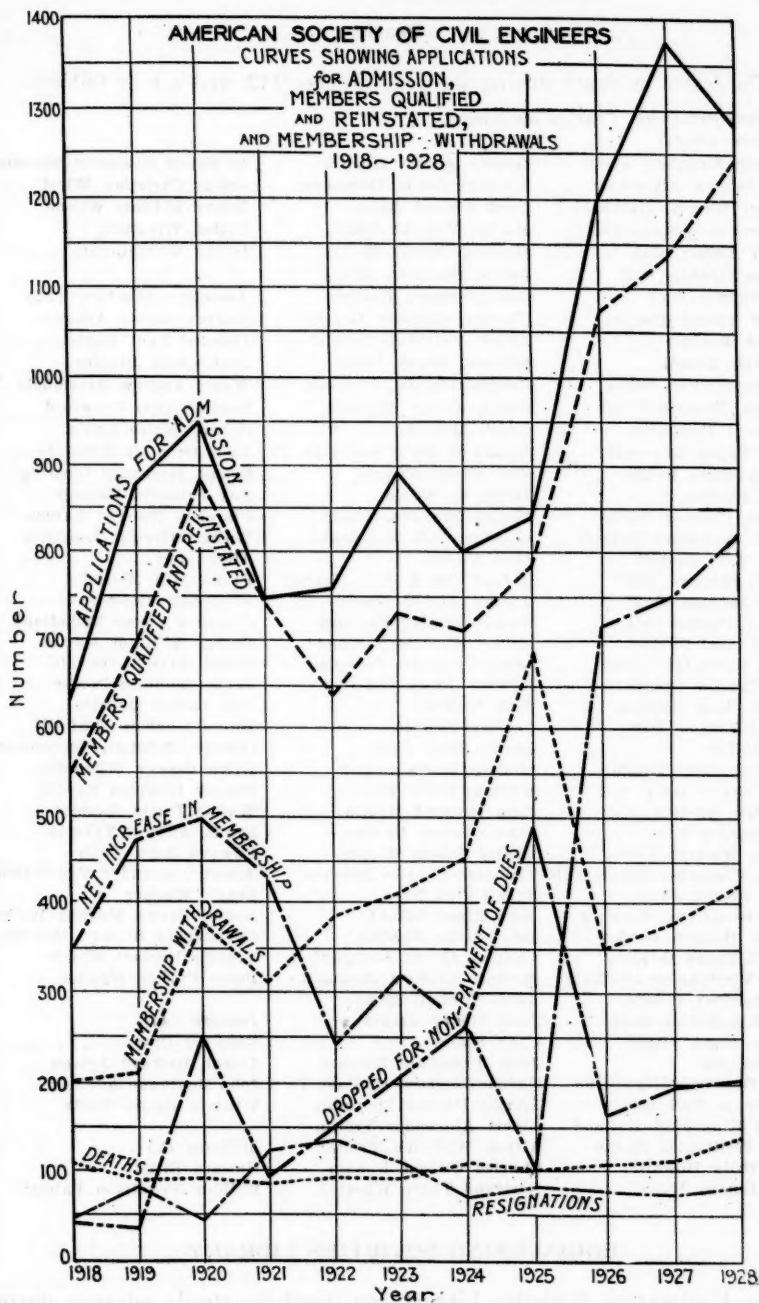
Applications for Membership

The total number of applications for membership was 1 558, of which 1 284 were for admission and 274 for transfer.

The number of applications received during the past ten years follows:

	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
For Admission.....	873	960	745	761	896	800	848	1 194	1 374	1 284
For Transfer.....	323	325	309	260	217	239	256	292	304	274
Total.....	1 196	1 285	1 054	1 021	1 113	1 039	1 104	1 486	1 678	1 558

* Includes reinstatements.



CURVES SHOWING NEW MEMBERS AND NET INCREASE IN MEMBERSHIP,
1918-1928.

Deaths

The losses by death during the year number 142, and are as follows:

Past-President: Charles Macdonald.

Members (103):

Frederic Vaughan Abbot
John Jarrett Albertson
Warren Martin Archibald
William S. Auchincloss
Leland Rella Balch
Charles Backus Ball
John Wesley Ball
George Strong Baxter
Willard Beahan
Hezekiah Bissell
William Herbert Bixby
William Titcomb Blunt
Alexander Brociner
Ralph Elijah Brownell
Stephen Sans Bunker
James Burden
William Charles Burke
Eugene Dickinson Burnell
Robert Lee Burney
Thomas Shepard Burr
Henry Jackson Burt
David Sylvanus Carll
Herbert Neal Cheney
Joseph Kittredge Choate
John Charles Churchill
Edward Zane Collings
Richard Turner Dana
Paul Didler
Frederick Clark Dunlap
Albert Henry Dyer
Otto Marc Eldlitz
John Stanton Ely
William Wallace Ewing
Charles Frederick Wilson Felt
Josiah Foster Flagg
Austin Bradstreet Fletcher
William Hayden Ford
Edmond Burns Geddes
George Washington Goethals
Silas Maxwell Haight
Richard Augustus Hale
Simpson Clark Heald
Hans Helland
James Ormerod Heyworth
John Byers Holbrook
Howard Kingsbury Holland
Harold Wellington Horne
Ralph Hills Howard
David Janney Howell

George Alfred Hughes
Richard Lewis Humphrey
Fred Atwood Jones
Harold Vincent Joslin
Howard George Kelley
Battle Hargrove Klyce
Oscar Francis Lackey
Charles Wellford Leavitt
Frank McDowell Leavitt
William Henry Luster
George Thomas Mawson
Frank Oscar Maxson
Frank Moberly
Alexander Bain Moncrieff
Will Klahr Monroe
James C. Nagle
Almos Davidson Neeld
William Taft Newcomb
John Nichol
Robert Van Arsdale Norris
George Albert Noska
Ralph Gooding Packard
Robert Stevens Parsons
Lewis Frederick Patstone
Edward Jones Pearson
Seth Perkins
Ysidoro Polledo
James Bond Pope
Charles Lewis Potter
William Gunn Price
John Richard Rablin
John Chester Ralston
Harley Edson Reeves
Theodore Charles Roberts
Rudolf Viedt Rose
John Einar Selander
Ivan Oscar Shaffer
Charles Alfred Sheppard
Herbert Ellwood Sherman
Allen Newhall Spooner
John Henry Staats
Cady Staley
John Truesdale Stewart
Eugene Augustus Hoffman Tays
Sturgis Hooper Thorndike
Albert Alexander Trocon
Alfred Williams Trotter
Charles Clifton Upham
Bertrand Thorp Wheeler

De Forest Augustus Wheelock
Julius Christian Wiest
Henry William Wilson
Nisbet Wingfield
Irving Worthington

Associate Members (32)

Andrew Lewis Ackhart
Howard Paul Bayly
John Clark Bentley
Wyatt Andrew Brownfield
Merlin Cross Crawford
Robert Waite Davis
John Grenfell Edwards
Frank Alexander Giesting
Guy Frederic Hosmer
Clarence Melrose Larson
Walter Harlan Leckliter
Alfred Levy
Frank Hill McGuffie
Frederick Meister
Clarence Victor Milholland
George William Morton
Virgil Samms Onstott
James Madison Porter
Ben Tarver Quarles
Harry Charles Sanford
George Christian Schoenberger
Erich George Schroeder
Hunter Imboden Snyder
Walter Tuttle Spencer
Frank Andrew Tillman
Edward John Tully
Albert Alexander Van Petten
Frank Wagner
Robert Brown Murphy Wilson
Christopher Stanton Wolcott
Francis Herbert Wright
Peter Parker Wyman

Juniors (4)

Wen-Hu Chu
Joseph Richard Jenson
John Montague Sessions
William Bacon Wells

Affiliates (2)

Howard Elliott
William Pendleton Palmer

ENGINEERING SOCIETIES LIBRARY

The Engineering Societies Library continued its steady advance during the past year. Statistics follow giving comparative figures for 1927 and 1928:

Additions:	1927.	1928.
Volumes (by gift).....	3 897	4 818
" (by purchase)	1 636	5 533
	<hr/>	<hr/>
Pamphlets (by gift).....	624	1 117
" (by purchase)	148	772
	<hr/>	<hr/>
Maps (by gift).....	1 930	206
" (by purchase)	259	2 189
	<hr/>	<hr/>
Searches	100	75
Total additions	8 594	8 369
Permanent collection	115 708	129 793
Expenditures for books, periodicals, binding, supplies, and salaries (approximate).....	\$42 000	\$45 584
The Library was used by.....	34 317	37 236
Including personal visits by.....	24 398	23 470
Volumes cataloged	6 454	6 629
Cards added to catalog.....	33 408	33 460
Total catalog cards, arranged under subject.....	328 685	362 145
Inquiries in Search Department.....	423	398
Searches made	195	202
Translations made	228	196
Total number of words.....	444 900	486 425
Photoprints made	36 385	34 964
Number of persons securing photoprints.....	3 407	3 637
Receipts for service.....	\$20 000	\$20 261
Members borrowing books.....	222	317

READING ROOM OF THE SOCIETY

The attendance at the Reading Room during the year was 2 371.

Two hundred and seventy-six periodicals are regularly received, and this number covers many foreign periodicals.

The list of recent engineering articles of interest which is prepared monthly by the assistants in the Reading Room, contained 2 644 titles and covered 93 pages. Fifty-one periodicals were indexed.

EMPLOYMENT SERVICE

The Employment Service now has offices in New York, N. Y., Chicago, Ill., and San Francisco, Calif.

The number of men placed during 1928 has averaged about 138 per month. The following table shows the registrations and placements in the three offices:

REGISTRATIONS AND PLACEMENTS IN THE
NEW YORK, CHICAGO, AND SAN FRANCISCO OFFICES IN 1928.

Month.	MEN REGISTERED.				MEN PLACED.			
	New York.	Chicago.	San Francisco.	Total.	New York.	Chicago.	San Francisco.	Total.
January	84	43	33	160	76	17	25	118
February	97	40	35	172	88	20	19	127
March.....	107	29	34	170	82	21	22	125
April.....	114	34	40	188	111	18	44	173
May.....	140	38	42	220	84	11	33	128
June.....	175	45	42	262	110	12	39	161
July.....	102	53	47	202	82	17	42	141
August	117	39	40	196	90	20	36	146
September..	101	36	31	168	84	18	49	151
October.....	108	34	35	177	82	16	34	132
November ..	104	24	37	165	95	15	33	143
December...	85	21	25	131	87	16	10	113
Total.....	1 334	436	441	2 211	1 071	201	386	1 658

COMMITTEES

The fifteen Special Committees authorized to report on engineering subjects are as follows:

Stresses in Railroad Track (Authorized November 12, 1913).

To Consider and Recommend for Adoption a Specification for Bridge Design and Construction (Authorized August 9, 1920).

Impact in Highway Bridges (Authorized April 4, 1922).

Flood Protection Data (Authorized April 4, 1922).

Hydraulics Phenomena (Authorized April 4, 1922).

Irrigation Hydraulics (Authorized April 4, 1922).

Concrete and Reinforced Concrete Arches (Authorized January 16, 1923).

Steel Column Research (Authorized January 16, 1923).

Effects of Earthquakes on Engineering Structures with Special Reference to the Japanese Earthquake of September 1, 1923 (Authorized October 16, 1923).

Cement (Authorized October 22, 1924).

City Planning of Washington, D. C. (Authorized April 20, 1925).

Reform in Transportation System of the Country (Authorized July 12, 1926).

Charges and Method of Making Charges for Professional Services (Authorized April 18, 1927).

Engineering Employment in Public and Quasi-Public Offices (Authorized April 19, 1927).

Soils (Authorized July 11, 1927).

PUBLICATIONS

Ten numbers of *Proceedings*, Parts I and II, and one number of Part III, one volume of *Transactions*, a Year Book, and a new edition of "Aims and

Activities" have been published in 1928. Part I of *Proceedings* consists of Society Affairs, Papers, Discussions, and Memoirs; Part II is the informal news section; and Part III (May, 1928) contains the report of the Committee of Engineering Foundation on Arch Dam Investigation.

The stock of the various publications of the Society kept on hand for the convenience of members and others now amounts to 89 820 copies, the cost of which to the Society for paper and press work only, has been \$20 175.75.

The table (see page 78) shows the cost per page for text and illustrations in *Proceedings* and *Transactions* for the past fifteen years.

The subjects of the papers and discussions in *Proceedings* and *Transactions* during the year, and the number of pages devoted to each, follows:

Subject.	Transactions, pages.	Proceedings, pages.
Highway Engineering.....	56	62
Snow Removal.....	...	2
Structural Engineering.....	186	596
Contracts.....	...	34
Materials of Engineering.....	...	56
Earthwork.....	10	...
Dams.....	149	766
Tunnels.....	83	...
Railways.....	...	90
Logging.....	82	...
Hydrology, Hydraulics.....	63	274
Floods.....	...	238
Drainage and Irrigation.....	74	89
Waterways.....	194	206
Power Plants.....	185	30
Water Power.....	...	26
Water-Works.....	53	79
Sewage Disposal.....	42	64
Garbage Disposal.....	10	...
Sanitation.....	66	50
Industrial Waste Disposal.....	75	12
City Planning.....	236	80
Transportation.....	65	44
Power Transmission.....	...	22
Surveying.....	26	86
Valuation.....	...	28
	1 655	2 984

Summary of Publications for 1928

	Issues.	Average edition.	Total pages.	Plates.	Cuts.
<i>Proceedings</i> , Part I					
(monthly numbers).....	10	14 200	3 728	..	676
<i>Proceedings</i> , Part II					
(monthly numbers).....	10	18 240	40	..	14
<i>Proceedings</i> , Part III					
(monthly number).....	1	14 200	288	..	162
<i>Transactions</i> , Vol. 92.....	1	14 000	1 860	..	375
Year Book.....	1	14 300	478	1	2
Aims and Activities.....	1	20 000	38	1	5
Total	24	....	6 432	2	1 234

TABLE SHOWING NUMBER AND COST OF PAGES AND COST OF ILLUSTRATIONS FOR *Transactions* AND *Proceedings*.

Year.	TRANSACTIONS.				PROCEEDINGS, PART I.				PROCEEDINGS (PART I)* and TRANSACTIONS.				ILLUSTRATIONS.		
	Issues.	Edition.	Pages.		Issues.	Edition.	Pages.		Total pages.	Total cost.	Cost per page.	Percentage of total cost.	Cost.	Cost per page.	Percentage of total cost.
			Per volume.	Total.			Per volume.	Total.							
1913	1	7 700	2 302	17 740 000	10	7 025	3 184	24 280 000	42 020 000	\$43 350.77	\$0.00108	9.1	\$3 964.16	\$0.000094	9.1
1914	1	8 200	1 988	16 140 000	10	8 150	4 076	33 220 000	49 390 000	39 083.89	0.00079	7.6	2 963.32	0.000075	7.6
1915	2	8 600	3 130	26 900 000	10	8 425	3 668	30 900 000	57 800 000	47 934.16	0.00083	7.7	3 684.68	0.000064	7.7
1916	1	8 400	2 301	19 330 000	10	8 350	2 892	24 140 000	48 470 000	35 645.65	0.00082	8.9	1 403.12	0.000082	8.9
1917	..	.....	.....	.....	10	8 550	3 482	29 350 000	29 850 000	28 608.18	0.00097	12.9	3 703.97	0.000126	12.9
1918	1	8 700	1 879	16 340 000	10	8 950	2 341	20 950 000	37 290 000	33 785.64	0.00091	3.5	1 192.20	0.000032	3.5
1919	1	9 000	1 775	15 980 000	8	9 100	2 096	19 075 000	35 055 000	32 082.69	0.00091	3.5	1 128.53	0.000032	3.5
1920	..	.....	.....	.....	10	10 142	2 014	20 440 000	20 440 000	23 446.34	0.00115	10.9	2 532.27	0.000125	10.9
1921	2 { 10 000 10 500 993	.....	2 479 { 993	35 212 000	10	10 680	1 584	19 450 000	54 692 000	66 298.39	0.00121	3.1	2 034.72	0.000037	3.1
1922	1	10 900	1 825	19 900 000	10	11 100	2 740	30 400 000	50 300 000	56 200.00	0.00112	6.5	3 700.00	0.000073	6.5
1923	1	11 200	1 808	20 250 000	10	11 500	3 210	36 915 000	57 165 000	60 612.83	0.00106	7.9	4 809.88	0.000084	7.9
1924	1	11 500	1 515	17 440 000	10	11 750	2 612	30 700 000	48 140 000	47 573.72	0.00099	9.6	4 579.04	0.000095	9.6
1925	1	11 400	1 538	17 533 000	10	11 800	2 910	34 338 000	51 871 000	47 409.07	0.00091	13.4	6 339.19	0.000132	13.4
1926	2 { 12 100 12 900 13 200 16 223 000 {	.....	1 786 { 1 234 1 229	21 610 000 { 15 919 000 { 16 223 000 {	10	12 200	3 046	37 161 000	58 771 000	53 472.54	0.00091	9.5	5 080.91	0.000087	9.5
1927	2 { 12 100 12 900 13 200 16 223 000 {	.....	1 786 { 1 234 1 229	21 610 000 { 15 919 000 { 16 223 000 {	10	13 050	3 720	48 546 000	80 688 000	65 972.76	0.00080	14.0	9 279.49	0.000126	14.0
1928	1	14 000	1 860	26 040 000	10	14 200	4 016*	57 027 000	83 007 000	61 557.98	0.00074	12.4	7 249.00	0.000087	12.4

* Includes Part III, May 1923, 288 pp.

The cost of publications, as determined by the bills actually paid during the year, has been:

For Paper, Printing, etc., <i>Proceedings</i> , Part I.....	\$32 731.33
For Paper, Printing, etc., <i>Proceedings</i> , Part II.....	3 095.33
For Paper, Printing, etc., <i>Proceedings</i> , Part III.....	2 389.90
For Paper, Printing, etc., of 28 575 Extra Copies of Papers, Discussions, Memoirs	2 506.91
For Paper, Printing, etc., <i>Transactions</i> , Vol. 92.....	10 183.83
For 7 125 Extra Copies of Separate Papers for <i>Transactions</i> , Vol. 92	1 251.06
For Binding, Envelopes, etc., <i>Proceedings</i> , Part I.....	5 923.71
For Binding, etc., <i>Proceedings</i> , Part II.....	718.75
For Binding, Envelopes, etc., <i>Proceedings</i> , Part III.....	465.73
For Binding,* Boxes, etc., <i>Transactions</i> , Vol. 92.....	2 445.20
For Plates and Cuts	7 249.00
For Year Book	5 747.91
For "Aims and Activities".....	1 167.77
For Copyright and Sundry Expenses.....	199.28
Total	\$76 075.71
Deduct amount received from sale of publications.....	9 127.95
Net expenditures for publications in 1928.....	\$66 947.76

MEETINGS

Ten meetings of 11 sessions were held during the year, as follows: At the Annual Meeting, 1 (2 sessions); at the Spring Meeting at Washington, D. C., 1 (1 session); at the Annual Convention at Buffalo, N. Y., 1 (2 sessions); at the Fall Meeting at San Diego, Calif., 1 (2 sessions); and 6 regular meetings of the Society, held in the Engineering Societies Building, New York, N. Y.

At these meetings, there were presented 12 formal papers, 5 of which were illustrated with motion pictures and lantern slides, and 6 Addresses.

During the year, there were also published 8 Progress Reports of Special Committees, all of which were presented at the Annual Meeting, and 22 papers that were not presented at any meeting of the Society.

The number of members and others who took part in the preparation and discussion of these papers, addresses, and reports of Special Committees was approximately 350. This does not include those who took part in the preparation and discussion of papers presented at the meetings of the Technical Divisions, which meetings are listed on pages 16 to 18.

The total attendance at the ten meetings of the Society was about 4 282. The registered attendance at the Annual Meeting was 1 800; at the Spring Meeting, 867; at the Annual Convention, 342; and at the Fall Meeting, 475.

* Paper binding only.

The dates of the meetings of the Society during the year, together with titles of papers, addresses, reports of Special Committees, etc., presented thereat, are as follows:

January 18, 1928, Progress Reports of Special Committees on City Planning of Washington, D. C., Stresses in Railroad Track, Flood Protection Data, Concrete and Reinforced Concrete Arches, Irrigation Hydraulics, Arbitration, Hydraulics Phenomena, and Impact in Highway Bridges.

February 1, 1928, "The Virginian Railway Electrification", by George Gibbs, M. Am. Soc. C. E.

March 7, 1928, "General Contract System versus Segregated Contracts", by Ward P. Christie, Assoc. M. Am. Soc. C. E.

April 25, 1928 (One Session), Addresses by the Hon. Herbert Hoover, Hon. M. Am. Soc. C. E.; and on "The Work of the Bureau of Standards in Relation to Engineering", by Dr. Lyman J. Briggs, Assistant Director, U. S. Bureau of Standards.

May 2, 1928, "Hydrostatic Uplift in Pervious Soils", by H. de B. Parsons, M. Am. Soc. C. E.

June 6, 1928, "Flood Control on the River Po in Italy", by John R. Freeman, Past-President, Am. Soc. C. E.

July 18, 1928 (Two Sessions), "Builders, Defenders, and Political Despoilers of Our Country",* Address by Lincoln Bush, President, Am. Soc. C. E.; "The Engineering Pioneers of the Niagara Frontier", by Walter McCulloh, M. Am. Soc. C. E.; and "Interim Report of the Special International Niagara Board on the Preservation of Niagara Falls", by Robert S. Thomas, M. Am. Soc. C. E.

September 5, 1928, "Modernizing the Suburban Transit of the Metropolitan District", by Francis Lee Stuart, M. Am. Soc. C. E.

October 3, 1928, "Letting Construction Work by Competitive Bidding", by Edward W. Bush, M. Am. Soc. C. E.

October 3, 1928 (Two Sessions), "The Eyes of the Fleet", by Joseph Mason Reeves, Rear-Admiral, U. S. N.; "Air Craft Carriers", by Kenneth Whiting, Commander, U. S. N.; "Weather and Its Effect on Air Transport", by Ford A. Carpenter, Affiliate, Am. Soc. C. E.; "Landing Fields", by George D. Burr, Assoc. M. Am. Soc. C. E.; "Co-Ordination of Rail-Air Transportation", by Stephen H. Noyes, M. Am. Soc. C. E.; and "Passenger and Freight Service", by C. C. Mosely, Esq.

The papers published in *Proceedings*, but not presented at any meeting of the Society, were as follows:

January, 1928, "Analysis of Arch Dams by the Trial Load Method", by C. H. Howell, M. Am. Soc. C. E., and the late A. C. Jaquith, Esq.; and "Stream Flow in General Terms", by Melvin D. Casler, M. Am. Soc. C. E.

February, 1928, "Crown Stresses in a Skew Arch", by J. Charles Rathbun, M. Am. Soc. C. E.; "Inlets on Sandy Coasts", by Earl I. Brown, M. Am. Soc. C. E.; "The Compressibility of Sand-Mica Mixtures", by Glennon Gilboy, Jr., Jun. Am. Soc. C. E.; and "Silting of the Lake at Austin, Texas", by T. U. Taylor, M. Am. Soc. C. E.

* *Transactions*, Am. Soc. C. E., Vol. 92 (1928), p. 1646.

March, 1928, "Upward Pressures Under Dams: Experiments by the United States Bureau of Reclamation" by Julian Hinds, M. Am. Soc. C. E.; "Continuous Beams Over Three Spans", by I. Oesterblom, M. Am. Soc. C. E.; "The Design of Airplane Wing-Beams", by Joseph S. Newell, Jun. Am. Soc. C. E.; and "Chemical-Electric Measurement of Water", by Angelo Barbagelata, Esq.

April, 1928, "Imagination in City Planning", by Stephen Child, M. Am. Soc. C. E.; and "Load Distribution in High Arch Dams", by R. A. Sutherland, Assoc. M. Am. Soc. C. E.

May, 1928 (Part I), "Hydraulic Studies and Operating Results on the Miami Flood Control System", by C. H. Eiffert, M. Am. Soc. C. E.; "A Proposed Formula for Columns", by T. F. Hickerson, M. Am. Soc. C. E.; "Effect of Earth Shocks on Structures", by M. de Bussy, Esq.; and "The Stiffness of Suspension Bridges", by S. Timoshenko, Esq.

May, 1928 (Part III), Report of Committee of Engineering Foundation on Arch Dam Investigation.

August, 1928, "The Isthmian Canal Situation", by Hans Kramer, Assoc. M. Am. Soc. C. E.; and "Characteristics of Centrifugal Oil Pump", by Michael D. Aisenstein, Esq.

September, 1928, "Concrete Pavement Over Poor Sub-Grade at Port Newark, New Jersey", by Chester Mueller, Jun. Am. Soc. C. E.

October, 1928, "Water Supply Problems of a Desert Region", by William E. Rudolph, M. Am. Soc. C. E.

November, 1928, "Pumped-Storage Hydro-Electric Plants", by William W. K. Freeman, Assoc. M. Am. Soc. C. E.

December, 1928, "Specifications for Transit Traversing and Stadia Leveling", by W. H. Rayner, Assoc. M. Am. Soc. C. E.

MEDALS AND PRIZES

The award of Medals and Prizes for the year ending July, 1928, was as follows:

The Norman Medal to Charles E. Sudler, M. Am. Soc. C. E., for his paper entitled "Storage Required for the Regulation of Stream Flow".

The Thomas Fitch Rowland Prize to Roderick B. Young, Esq., for his paper entitled "Producing Concrete of Uniform Quality".

The James Laurie Prize to James F. Case, M. Am. Soc. C. E., for his paper entitled "The Ancient Roman Aqueduct at Athens".

The Arthur M. Wellington Prize to Roy G. Finch, M. Am. Soc. C. E., for his paper entitled "The New York State Barge Canal and Its Operation".

The Collingwood Prize for Juniors to Franklin Hudson, Jr., Jun. Am. Soc. C. E., for his paper entitled "The Design, Construction, and Operation of a Small Sewage Disposal Plant".

LOCAL SECTIONS

There are at present 46 Local Sections. The Mid-South Section was authorized by the Board of Direction July 17, 1928, but it has not yet been formally organized.

TECHNICAL DIVISIONS

Meetings of the City Planning, Construction, Highway, Irrigation, Power, Sanitary Engineering, Structural, Surveying and Mapping, and Waterways Divisions have been held during the year.

The membership has shown an active interest in the work and activities of the various Divisions as is indicated by the twenty-one Division programs given at the Quarterly Meetings.

The meetings of the Divisions during the year, together with the papers presented thereat, are as follows:

City Planning Division

January 19, 1928 (Joint Session with Highway Division), "The Relation of the Landscape Architect to the Allied Professions Engaged in City Planning",* by Arthur A. Shurtleff, Esq.; and "Engineering Applied to National Parks",† by Stephen T. Mather, Esq.

April 26, 1928, Symposium on "The Use of the Round Point in the City Plan"; "The Round Point in the Design of Washington", by Charles W. Eliot, 2d, Esq.; "Underground Utilities, Mains, Wires, Subways, Etc.", by J. B. Gordon, M. Am. Soc. C. E.; "General Planting, Statuary, and Vista", by the late Charles Wellford Leavitt, M. Am. Soc. C. E.; "The Architectural Development", by Albert L. Harris, Esq.; and "The City Planners' Summation", by George B. Ford, Esq.

October 4, 1928, "Airport Ownership", by William P. MacCracken, Jr., Esq.; and "Requirements of Size, Location, and Arrangement of a Municipal Airport", by Donald M. Baker, Assoc. M. Am. Soc. C. E.

Construction Division

January 19, 1928, "Undergraduate Engineering Courses", by Charles M. Spofford, M. Am. Soc. C. E.; "Engineering Education and the Building Industry", by Professor Theodore Crane; and "Construction Methods and Plant in Building Construction", by John R. Kilpatrick, Esq.

April 26, 1928, "Job Control and Design of a Concrete Mix to Predetermined Strength", by John G. Ahlers, M. Am. Soc. C. E.; and "Construction Features of the Arlington Memorial Bridge", by H. N. Crichton, Esq.

Highway Division

January 19, 1928, Symposium on "Economic Comparisons of Various Types of Road Surfacing":‡ (1) "Economic Comparisons of Road Surfaces—Wisconsin", by F. E. Everett, M. Am. Soc. C. E.; and (2) "Economic Comparisons of Road Surfaces—New Hampshire", by H. J. Kuelling, M. Am. Soc. C. E.

* *Proceedings*, Am. Soc. C. E., December, 1928, Papers and Discussions, p. 2667.

† *Loc. cit.*, p. 2673.

‡ *Loc. cit.*, November, 1928, Papers and Discussions, p. 2477, *et seq.*

October 4, 1928, "Bituminous Treatment of Fine Crushed Rock and Gravel Roads", by Thomas E. Stanton, Jr., M. Am. Soc. C. E.; and "Highway Problems in Relation to Cities", by Julius Adler, M. Am. Soc. C. E.

Irrigation Division

October 4, 1928, "Report of the Committee of the Irrigation Division on 'A National Reclamation Policy'";* and "Reclamation Policy of the Colonial Government in India", by E. S. Lindley, M. Am. Soc. C. E.

October 4, 1928 (Joint Session with Construction Division), Symposium on "High Dams": (1) "Past Experience and Outlook for the Future", by A. J. Wiley, M. Am. Soc. C. E.; (2) "Various Types of High Dams, Classification, Selection, and Adaptation", by D. C. Henny, M. Am. Soc. C. E.; (3) "Foundation and Location Requirements of High Dams, from the Viewpoint of the Geologist", by F. L. Ransome, Esq.; and (4) "Engineering Skill of the Modern Constructor", by W. T. Chevalier, M. Am. Soc. C. E.

Power Division

January 19, 1928, "Experimentation on Prevention of Scour at Spillway Dams", by F. W. Scheidenhelm, M. Am. Soc. C. E.; and "Experiments on a Celluloid Model of the Stevenson Creek Test Dam", by G. E. Beggs, M. Am. Soc. C. E.

July 19, 1928, "Niagara Power", by N. R. Gibson, M. Am. Soc. C. E.

Sanitary Engineering Division

January 19, 1928, (1) "The Scituate Water Supply of Providence, R. I.", by F. B. Marsh, M. Am. Soc. C. E.; (2) "Design and Construction Features of the Akron Sewage Treatment Plant", by J. E. Root, M. Am. Soc. C. E.; and (3) Reports of Division Committees: (a) On Sewage Works Operation and Control;† (b) On Filtering Materials;‡ (c) On Friction of Sludge in Pipes; and (d) on Matters Relating to Stream Pollution.§

April 26, 1928, "The Washington Water Supply", by J. E. Curtis, M. Am. Soc. C. E.

July 19, 1928, Symposium on "The Sanitary Character of the Waters of Lake Erie and the Niagara River": (1) "Pollution of Lake Erie and the Niagara River, and Its Effect on the Water Supplies of Municipalities Served Therefrom", by Earl Devendorf, Assoc. M. Am. Soc. C. E.; and (2) "Niagara River Pollution and the International Joint Commission", by George H. Norton, M. Am. Soc. C. E.; and "Refuse and Garbage Disposal on the European Continent: A Description of Several Incinerating and Beccari Plants", by Francis L. Pruyn, M. Am. Soc. C. E.

October 4, 1928, Symposium on "Experiences with Activated Sludge Plants in California": (1) "Five Years' Operation of the Lodi Activated Sludge

* *Proceedings*, Am. Soc. C. E., September, 1928, Papers and Discussions, p. 2097.

† *Loc. cit.*, March, 1928, Society Affairs, p. 153.

‡ *Loc. cit.*, p. 155.

§ *Loc. cit.*, April, 1928, Society Affairs, p. 243.

Plant", by Clyde F. Smith, Assoc. M. Am. Soc. C. E.; (2) "Interesting Experiences at Pomona Activated Sludge Plant", by Alva J. Smith, M. Am. Soc. C. E.; (3) "Experiences with the Activated Sludge Plant of Sanitation Districts Nos. 1 and 2 of Los Angeles County", by A. K. Warren, Assoc. M. Am. Soc. C. E.; (4) "Tri-City Sewage Disposal", by R. V. Orbison, M. Am. Soc. C. E.; (5) "Theory on Pre-determining the Extent of a Sewage Field in Sea Water", by A. M. Rawn, and Harold K. Palmer, Members, Am. Soc. C. E.; (6) "Engineering Applications of Industrial Wastes Treatment Research", by Harry N. Jenks, Assoc. M. Am. Soc. C. E.; and (7) "Operating Experiences at the Activated Sludge Plant at Dunsmuir, California", by C. C. Kennedy, M. Am. Soc. C. E.

Structural Division

January 19, 1928, "Structural Features of the Hudson River Bridge", by Leon S. Moisseiff, M. Am. Soc. C. E.; Final Report of Structural Committee on Florida Hurricane Effects;* and "Design and Construction of the Carquinez Strait Bridge", by D. B. Steinman, M. Am. Soc. C. E.

April 26, 1928, "Repairs to the White House Roof", by U. S. Grant, 3d, Assoc. M. Am. Soc. C. E.; and "Design and Construction of the Arlington Memorial Bridge", by John L. Nagle, Assoc. M. Am. Soc. C. E.

Surveying and Mapping Division

January 19, 1928 (Joint Session with City Planning Division), (1) "Base Maps for Regional Planning",† by Harland Bartholomew, M. Am. Soc. C. E.; and (2) "Standard City Engineering Surveys",‡ by Robert H. Randall, M. Am. Soc. C. E.

April 26, 1928 (Two Sessions), (a) Report of Committee on Boundary Surveys; (b) Report of Committee on Location and Construction Surveys; and (d) Report of Committee on Control Surveys; "The Surveying and Mapping Activities of the Federal Government", by T. W. Norcross, Assoc. M. Am. Soc. C. E.; and "Good Maps Are a Sound Investment", by L. R. Lohr, M. Am. Soc. C. E.

Waterways Division

July 19, 1928, "Regulation of Levels, Flow, and Navigation on the Great Lakes: Summary and Conclusions of Various Studies", by George B. Pillsbury, M. Am. Soc. C. E.

In addition to the papers and reports of Committees presented at the quarterly meetings of the various Divisions as herein noted, valuable reports of Division Committees have been published in *Proceedings* during 1928, as follows:

* *Proceedings*, Am. Soc. C. E., August, 1928, Papers and Discussions, p. 1757.

† *Loc. cit.*, p. 1745.

‡ *Loc. cit.*, p. 1749.

Irrigation Division: Interstate Water Matters;* Drainage of Irrigated Lands;† and Consumptive Use of Water.‡

Sanitary Engineering Division: Operation and Control of Sewage Works;§ Stream Pollution Matters;|| and Filtering Materials for Water and Sewage Works.¶

Surveying and Mapping Division: Horizontal Control in Surveying.**

Membership of Technical Divisions

There are now 11 165 members enrolled in the Technical Divisions as follows:

City Planning Division.....	1 396
Construction Division	1 875
Highway Division	1 825
Irrigation Division	775
Power Division	574
Sanitary Engineering Division.....	1 375
Structural Division	2 097
Surveying and Mapping Division.....	581
Waterways Division	667

STUDENT CHAPTERS

There are at present 23 students who have taken advantage of the By-Law which enables them to continue affiliation with the Chapters until the first day of the second January following graduation.

New Student Chapters

The Student Chapters now number 93, the total membership of which is 4 967. Three new Chapters were organized during the year:

Mississippi Agricultural and Mechanical College
South Dakota State School of Mines
University of New Hampshire

FINANCES

Again, this year there has been an appreciable increase in operating expense. The past three years, in fact, have all seen an increased rate of expenditure, not only because of those expenses necessarily incident to an increased growth in membership but because of new and enlarged activities. Publications, meetings, the work of Committees and the Technical Divisions have each been considerably expanded.

* *Proceedings*, Am. Soc. C. E., March, 1928, Society Affairs, p. 120.

† *Loc. cit.*, p. 131.

‡ *Loc. cit.*, April, 1928, Society Affairs, p. 214.

§ *Loc. cit.*, March, 1928, Society Affairs, p. 153.

|| *Loc. cit.*, p. 155.

¶ *Loc. cit.*, April, 1928, Society Affairs, p. 243.

** *Loc. cit.*, November, 1928, Papers and Discussions, p. 2491.

Payment of \$10 000 was made on the mortgage. There is cash on hand in the amount of \$62 133.20. This is exclusive of various Trust Funds, which amount to \$7 326.32.

The reports of the Secretary and Treasurer are appended.

By order of the Board of Direction,

GEORGE T. SEABURY, *Secretary.*

January 14, 1929.

**REPORT OF THE TREASURER OF THE
AMERICAN SOCIETY OF CIVIL ENGINEERS
FOR THE YEAR ENDING DECEMBER 31, 1928**

In compliance with the provisions of the Constitution, I have the honor to present the following report:

Cash on Hand January 1, 1928..... \$54 106.66

RECEIPTS

From Current Sources, January 1 to December 31..	\$315 491.73	
Dues collected for Power Division.....	370.00	
“ “ “ City Planning Division.....	85.00	
“ “ “ Surveying and Mapping Division.....	25.00	
Rent from 57th Street Property	30 771.87	
From Engineering Foundation for:		
Special Committee on Concrete and Reinforced Concrete Arches	1 500.00	
Special Committee on Steel Column Research..	2 000.00	
Contributions to Soils Committee.....	1 300.00	
The Freeman Fund Investments.....	1 584.92	
Interest on Investments.....	3 983.30	
Maturity of Various Securities.....	96 562.67	453 674.49

DISBURSEMENTS

Payment of Bills by Audited Vouchers for Current Business, January 1 to December 31.....	\$317 525.31	
Local Sections	9 951.00	
Technical Divisions	9 282.65	
Payment on Mortgage, 57th Street Property.....	10 000.00	
Purchase of Securities.....	91 562.67	
Balance on Hand December 31, 1928:		
In Garfield National Bank.....	\$63 959.52	
In hands of Secretary.....	5 000.00	
In Chase National Bank.....	500.00	69 459.52
	\$507 781.15	\$507 781.15

Respectfully submitted,

OTIS E. HOVEY,

Treasurer.

REPORT OF THE SECRETARY FOR THE TO THE BOARD OF DIRECTION OF THE

GENTLEMEN:—I have the honor to present a statement of Receipts and Disbursements for the fiscal year of the Society, ending December 31, 1928. There is also appended a general Balance Sheet showing the condition of the affairs of the Society.

Respectfully submitted,

GEORGE T. SEABURY,

Secretary.

RECEIPTS

Balance on Hand January 1, 1928.....		\$54 106.66*
Entrance Fees.....	\$23 290.00	
Current Dues.....	169 305.40	
Past Dues.....	13 053.40	
Advance Dues.....	62 086.61	
Binding of Transactions.....	14 469.00	
Badges.....	6 988.75	
Certificates of Membership.....	842.00	
Sale of Publications.....	9 127.95	
Interest on Deposit.....	886.79	
Interest on Investments.....	3 308.30	
Interest Accrued.....	2 036.88	
Annual Meeting.....	5 343.50	
Income from 57th Street Property:		
Rent from Ajax Rubber Co. to Dec. 14, 1928..	\$21 953.32	
" " Shattuck Co. Dec. 15-31, 1928..	2 187.50	
	24 140.82	
Credited to 57th Street Property Fund:		
Additional Rent from Shattuck Co., Aug. 1-Dec. 14, 1928...	6 631.05	
Postage.....	195.56	
Miscellaneous.....	1 608.65	
The Freeman Fund:		
Income.....	1 584.92	
Principal.....	3 757.24	
For Power Division, 1928 Dues.....	370.00	
For City Planning Division, 1928 Dues.....	85.00	
For Surveying and Mapping Division, 1928 Dues.....	25.00	
From Engineering Foundation in Credit to:		
Special Committee on Steel Column Research.....	2 000.00	
Special Committee on Concrete and Reinforced Concrete		
Arches.....	1 500.00	
Arch Dam Report.....	2 500.00	
Contributions to Soils Committee (Special Account).....	1 300.00	
Maturity of Bonds.....	96 562.67	
57th Street Property Fund, Interest.....	675.00	\$453 674.49
		<u>\$507 781.15</u>
*Society Funds in Garfield National Bank.....	\$42 163.89	
Petty Cash (in hands of Secretary).....	5 000.00	
In Chase National Bank.....	500.00	\$47 663.89
For Special Committee on Stresses in Railroad Track.....	2 840.78	
Collected for Power Division:		
1923-1928 Dues.....	\$2 118.80	
Less expended.....	578.43	1 540.37
Collected for City Planning Division:		
1926-1927 Dues.....	185.00	
The Rudolph Hering Medal.....	449.67	
The Freeman Fund:		
Principal.....	.15	
Income.....	625.76	625.91
The 57th Street Property Fund.....	801.04	
		<u>\$54 106.66</u>

YEAR ENDING DECEMBER 31, 1928

AMERICAN SOCIETY OF CIVIL ENGINEERS.

DISBURSEMENTS

Salaries of Officers.....	\$18 725.00	
Retirement Allowances.....	6 954.48	
Clerical Help.....	81 023.37	
Publications.....	76 075.71	
Binding of <i>Transactions</i>	4 559.41	
General Printing.....	3 328.69	
Badges.....	4 918.30	
Certificates of Membership.....	531.34	
Annual Prizes.....	304.05	
Meetings:		
Annual Meeting.....	9 348.25	
Annual Convention.....	1 991.78	
Annual Spring Meeting.....	2 118.25	
Annual Fall Meeting.....	1 849.79	
Monthly Meetings.....	1 210.27	
Local Sections.....	9 951.00	
Technical Divisions:		
Sanitary Engineering.....	2 373.76	
Power.....	295.10	
Irrigation.....	1 138.58	
Highway.....	650.85	
City Planning.....	1 283.85	
Structural.....	887.28	
Construction.....	1 489.04	
Waterways.....	280.64	
Surveying and Mapping.....	883.55	
Traveling Allowance of Officers.....	19 284.11	
Traveling Allowance of Standing Committees.....	1 953.06	
Work of Committees:		
Mileage.....	3 997.50	
Other Expenditures.....	8 808.25	
Reading Room.....	496.23	
Employment Service.....	1 815.00	
Office Supplies.....	3 212.56	
Postage.....	12 819.94	
Furniture and Office Equipment.....	2 451.78	
Current Business.....	5 334.94	
United Engineering Society:		
General Assessment.....	10 241.75	
Library.....	8 940.04	
Telephone.....	1 361.85	
Payment on Mortgage.....	10 000.00	
Interest on Mortgage.....	3 750.00	
Premium on Insurance.....	819.13	
Miscellaneous.....	1 734.28	
Purchase of Bonds.....	91 582.67	
Interest Accrued.....	2 057.54	
Stevenson Creek Dam.....	500.00	
Student Chapters.....	1 022.42	
The Freeman Fund:		
Income and Expenses.....	1 725.00	
Principal.....	3 575.99	
Alterations on 15th Floor.....	1 477.75	
57th Street Property Fund:		
Purchase of Securities.....	7 157.50	\$438 321.63
Cash on Hand, December 31, 1928.....		69 459.52*
		<u>\$507 781.15</u>
*Society Funds in Garfield National Bank.....	\$56 633.20	
Petty Cash (in hands of Secretary).....	5 000.00	
In Chase National Bank.....	500.00	\$62 133.20
For Special Committee on Stresses in Railroad Track.....		1 352.63
" Steel Column Research.....		395.68
Collected for Power Division:		
1923-1928 Dues.....	\$2 448.80	
Less expended.....	578.43	1 910.37
Collected for City Planning Division:		
1926-1928 Dues.....		270.00
Collected for Surveying and Mapping Division:		
1928 Dues.....		25.00
The Rudolph Hering Medal.....		455.97
The Freeman Fund:		
Principal.....	\$ 81.40	
Income.....	585.68	667.08
57th Street Property Fund.....		949.59
Soils Committee (Special account).....		1 300.00
		<u>\$69 459.52</u>

GENERAL BALANCE SHEET

ACCOMPANYING THE REPORT

ASSETS

Real Estate :

One-fourth interest in U. E. S. real estate, 25 to 33 West 39th Street, New York, N. Y.....	\$493 352.60	
220 West 57th St., New York, N. Y., at estimated value, net of depreciation.....	626 682.44	\$1 120 035.04

Equipment :

Furniture and office equipment.....	\$67 322.77	
Less, reserve for depreciation.....	51 415.27	15 907.50

Library :

Cash expended for books, etc.....	\$22 122.22	
Donations (estimated).....	72 310.83	94 433.05

Fund Investments :

Library and Prize Funds, etc. :

U. S. Liberty and New York City bonds, at cost.....	\$36 974.75	
Uninvested cash.....	1 916.03	38 890.78

The Freeman Fund :

Securities, at cost.....	\$25 237.01	
Uninvested cash.....	81.40	25 318.41

Phoebe Hobson Fowler Fund, securities, at par.....

10 000.00

The Fifty-Seventh Street Property Fund :

Securities, at cost.....	\$22 061.49	
Uninvested cash.....	928.93	
Accrued interest on investments..	283.13	23 273.55
		97 482.74

Securities held in trust (Phoebe Hobson Fowler Fund).....	2 000.00
---	----------

Working Assets :

Publications on hand.....	\$20 175.75	
Unexpired insurance premiums.....	776.14	20 951.89

Current Assets :

Cash :

In banks, general.....	\$55 399.83	
In hands of Secretary.....	5 000.00	
On deposit with U. S. Post Office.....	200.00	
In banks, for special purposes (<i>per contra</i>)....	6 133.33	66 733.16

Due from members (arrears)..... \$20 034.79

Due from non-members..... 1 004.67

Accrued interest on investments..... 383.32 21 422.78

\$1 438 966.16

We have examined the accounts of the AMERICAN SOCIETY OF CIVIL estimate of the property and Library valuations and book inventory of publication sets forth correctly the financial condition of the Society at that date.

NEW YORK, January 9, 1929.

DECEMBER 31, 1928

OF THE SECRETARY

LIABILITIES AND FUNDS:

Mortgage payable, due February 1, 1929.....	\$70 000.00	
Accrued interest on mortgage.....	1 458.30	\$71 458.30
1929 dues paid in advance.....		62 086.61
Unexpended balances of cash received for special purposes (<i>per contra</i>):		
Committee on Stresses in Railroad Track.....	\$1 352.63	
Committee on Steel Column Research.....	395.68	
Power Division.....	1 748.37	
City Planning Division.....	270.00	
Surveying and Mapping Division.....	25.00	
Soils Committee.....	1 300.00	
Rudolph Hering Medal Fund.....	455.97	
Freeman Fund income.....	585.68	6 133.33

Funds:

Herbert Stewart Library Fund.....	\$ 2 000.00	
Joseph G. Swift Library Fund.....	1 000.00	
Compounding Dues Fund.....	15 480.00	
Norman Medal Fund.....	1 000.00	
Rowland Prize Fund.....	1 222.50	
Collingwood Prize Fund.....	1 000.00	
Arthur M. Wellington Prize Fund..	2 150.00	
Fellowship Fund.....	13 038.28	
Hiram F. Mills Legacy.....	2 000.00	\$38 890.78
The Freeman Fund.....	25 318.41	
Phoebe Hobson Fowler Fund.....	10 000.00	
The Fifty-Seventh Street Property Fund.....	23 273.55	97 482.74
Securities held in trust (Phoebe Hobson Fowler Fund) <i>per contra</i> ..		2 000.00
Surplus, including amount arising from revaluation of real estate..	1 199 805.18	
		<u>\$1 438 966.16</u>

ENGINEERS for the year ended December 31, 1928, and (assuming that the
cations on hand are correct), we certify that, in our opinion, the above balance

LYBRAND, ROSS BROS. & MONTGOMERY,

Accountants and Auditors.

Annual Reports of the Technical Divisions

Annual Report of the Construction Division for 1928

To the members of the Construction Division is presented herewith a brief review of accomplishments during 1928 and an outline of proposed activities for 1929.

The purposes of the Division fall naturally into two broad classes:

(1) To provide programs for two or three meetings during the year in which important construction problems are considered through papers and discussions. That these programs may not infringe on the activities of the other more Technical Divisions, they, of necessity, must be confined to the ways and methods of accomplishing construction rather than to strictly engineering features of design and planning, thus resulting in papers somewhat more popular and broad in their presentation than heretofore presented at Society meetings.

(2) To compile through various committees experience and data that will be of interest and value to engineers in construction or to engineers directly supervising construction, that will make engineers more efficient constructors and constructors better engineers.

(A).—*Meetings.*—The Division had two meetings during 1928, one at the Spring Meeting of the Society in Washington, D. C., and the other at the Fall Meeting in San Diego, Calif.

At the Washington meeting, two papers were presented: "Job Control and Design of Concrete Mix to Predetermined Strength", by John G. Ahlers, M. Am. Soc. C. E., and "Construction Features of the Arlington Memorial Bridge", by N. H. Crichton, Resident Engineer on the Bridge.

At the San Diego meeting, a joint session was held with the Irrigation Division at which two Construction Division papers were presented: "Engineering Skill of the Modern Constructor", by Willard T. Chevalier, M. Am. Soc. C. E., and "Construction Methods and Plants as Illustrated at the Coolidge Dam, Arizona", by J. G. Tripp, Construction Engineer and General Superintendent on the Dam.

In addition to the Annual Meeting, two meetings are scheduled for 1929. The first will be held in April at the Spring Meeting of the Society in Dallas, Tex., and the second in July at the Annual Convention of the Society in Milwaukee, Wis.

(B).—*Committees.*—In addition to the existing Committee on Construction Engineering Education, five separate working committees have been set up during the year to study and report on the general problem of Construction Plant and Methods; these Committees were substituted for the previous General Committee and, with their chairmen, are as follows:

- (1) Road Building, Ralph Benedict, *Chairman*, Assistant Chief Highway Engineer, Springfield, Ill.
- (2) Hydro-Electric Work (Power Installations), William L. Locke, *Chairman*, Vice-President, Stone and Webster Engineering Corporation, Boston, Mass.
- (3) Concrete Buildings, A. P. Greensfelder, *Chairman*, President, Fruin-Colnon Contracting Company, St. Louis, Mo.

- (4) Steel Buildings, Alonzo J. Hammond, *Chairman*, Consulting Engineer, Chicago, Ill.
- (5) Concrete Bridges, D. B. Fegles, *Chairman*, General Manager, Fegles Construction Company, Minneapolis, Minn.

In a general way these Committees on Construction Methods and Plant will ultimately embody in their various reports data and information that will serve as a basis for a handbook to guide the engineer in the selection of the best methods and plant to use for his particular operation.

The work of these Committees has the more immediate purpose, however, of creating an equipment-and-method consciousness on the part of every engineer and of making equipment-and-method thinking in all branches of the profession more natural and orderly.

It is not planned that the reports of these Committees shall gather dust until sufficient data are at hand to complete an edition of a handbook. It is the Executive Committee's understanding that meritorious reports—those that contribute to existing knowledge and contain information susceptible to practical use—are to be published from time to time in one of the Society's publications.

In order to co-ordinate the activities of these various Committees and to edit the reports into something of a standard presentation, the Executive Committee has secured the co-operation of Waldo G. Bowman, Jun. Am. Soc. C. E. His experience and co-operation has enabled the preparation of these reports to go forward more rapidly and efficiently. *

Although the time has been short, the oldest Committee being in existence less than six months, the Executive Committee is able to append hereto individual reports from all five Committees.* Some are only outlines of work for 1929, but others include, in addition to their outlines, an expansion of some of the many ideas contained therein. Even the outlines, however, are so complete as to form a real contribution to the subject of "Construction Plant and Methods."

It is desirable, however, to emphasize that there is a standing invitation to all members of the Division to help in this work. It is highly desirable that the Committees hear directly from the Division members at large regarding what such a handbook should contain and for what type of man it should be written. In other words, it is your Division, and your ideas and requirements should be considered and taken care of by these Committees and by the general working plan.

As a further part of the activities of the Division there has been compiled a bibliography of books and leading magazine articles published during the past ten years on the general subject of Construction Plant and Methods. The bibliography contains about 700 references and is cross-indexed by subject-matter and author. Each reference includes the name of the author, source of data, number of pages, whether illustrated or not, and a four or five-line summary of what the article contains. It is expected to have this in final shape for issuance in the near future.

W. J. BARNEY, *Chairman.*

J. P. H. PERRY, *Vice-Chairman*,
ARTHUR C. EVERHAM, *Secretary*.

ARTHUR S. BENT,
JOSEPH E. SIRRINE,
Executive Committee.

* See Papers and Discussions.

Progress Reports of Special Committees of the Society

Progress Report of the Special Committee on Irrigation Hydraulics*

TO THE BOARD OF DIRECTION

AMERICAN SOCIETY OF CIVIL ENGINEERS:

GENTLEMEN.—The Committee held two general meetings in 1928—one at Berkeley, May 18 and 19, and the other at Los Angeles, Calif., October 1 and 2.

During the year Julian Hinds, M. Am. Soc. C. E., resigned from the Committee, as his duties in Mexico have prevented him from taking an active part in its work. The vacancy was filled by the appointment of Ivan E. Houk, M. Am. Soc. C. E.

The Committee has also been fortunate in securing the services of E. S. Lindley, M. Am. Soc. C. E., formerly Executive Engineer, Indian Public Works Department, Panjab, but now retired. He has been added as co-operating member to the Sub-Committees on Subject V, The Silt Problem, and Subject VIII, Irrigation Deliveries.

At present, it seems impossible to secure data or papers on Subject VI, Chutes and Drops. At the last meeting this subject was temporarily laid on the table and a new subject added, viz., XI, Fishways and Fish Screens.

The Committee has under investigation ten subjects, each assigned to a sub-committee. For some of these subjects engineers not members of the Committee, but having special knowledge or facilities for research, have been induced to act as co-operating members. The list follows:

I.—Evaporation Losses from Reservoirs.—Sub-Committee: F. C. Scobey, R. L. Parshall, A. L. Sonderegger, and Ivan E. Houk.

I (A).—Evaporation from Soils.—Sub-Committee: Franklin Thomas, A. L. Sonderegger, R. L. Parshall, and Ivan E. Houk; co-operating member, H. F. Blaney, Assoc. M. Am. Soc. C. E.

II.—Losses in Canal Conversions.—Sub-Committee: J. L. Savage, J. C. Stevens, F. C. Scobey, and R. A. Monroe.

III.—Water Movement and Pressure Under Dams.—Sub-Committee: J. L. Savage, R. A. Monroe, and B. A. Etcheverry; co-operating member, R. D. Hubbard, Engineer, U. S. Bureau of Reclamation, Denver, Colorado.

IV.—Losses in Siphon Spillways.—Sub-Committee: F. C. Scobey, Franklin Thomas, and A. L. Sonderegger.

V.—The Silt Problem.—Sub-Committee: Franklin Thomas, B. A. Etcheverry, and Ivan E. Houk; co-operating member, E. S. Lindley, M. Am. Soc. C. E.

VII.—Scouring Below Dams.—Sub-Committee: R. A. Monroe and B. A. Etcheverry; co-operating members: I. C. Steele, P. O. Crawford, and H. E. Gruner, Members, Am. Soc. C. E., and W. H. Nalder, Assoc. M. Am. Soc. C. E.

VIII.—Measuring Irrigation Deliveries.—Sub-Committee: R. L. Parshall, J. C. Stevens, and Ivan E. Houk; co-operating member, E. S. Lindley, M. Am. Soc. C. E.

* Presented at the Annual Meeting, January 17, 1929.

IX.—*The Design of Side Channel Spillways*.—Sub-Committee: J. L. Savage, R. A. Monroe, and B. A. Etcheverry.

XI.—*Fishways and Fish Screens*.—Sub-Committee: R. A. Monroe, B. A. Etcheverry, and Franklin Thomas.

The Committee has been able to stimulate the preparation of papers and discussions thereon by its members and others having particular knowledge and experience in the various subjects selected for study. It has also secured the co-operation of various National, State, and private agencies in undertaking experimental work in both field and laboratory. Where new structures are being built, the Committee has been able, in many instances, to have equipment included in the construction, that will facilitate field tests of their behavior.

As a result of the Committee's work a number of papers have been prepared and published by the Society. A list of these papers appears in the Progress Report for 1927.* During the past year the following papers have been added to the list:

Silt Accumulations in McMillan and Elephant Butte Reservoirs, by R. F. Walter, M. Am. Soc. C. E.,† appearing as a discussion to the paper by T. U. Taylor, M. Am. Soc. C. E., entitled "Siltng of the Lake at Austin, Texas."

"Upward Pressures Under Dams: Experiments by the United States Bureau of Reclamation",‡ by Julian Hinds, M. Am. Soc. C. E.

Experiments on a Model of the Leaburg Diversion Dam, by J. C. Stevens, M. Am. Soc. C. E.,§ appearing as a discussion of "Baffle-Pier Experiments on Models of Pit River Dams", by I. C. Steele and R. A. Monroe, Members, Am. Soc. C. E.

"The Improved Venturi Flume",|| by Ralph L. Parshall, Assoc. M. Am. Soc. C. E.

"Sand Control Works at Fort Laramie Canal Intake",¶ by Ivan E. Houk, M. Am. Soc. C. E.

STATUS OF INVESTIGATION BY SUBJECTS

I.—*Evaporation Losses from Reservoirs*. The Committee has been endeavoring to obtain reliable conversion factors to be used in converting evaporation observed in floating pans to actual evaporation from large surfaces. The only data of value thus far secured are those at the copper-lined reservoir at Fort Collins, Colo. A summary of the results secured from September, 1926, to August, 1928, exclusive of the winter months, December to March, shows that the following factors convert observed evaporation from pans to that of the 85-ft. reservoir:

	Percentage.
Standard floating pan.....	72
Colorado Type Tank.....	80
Class A Tank, U. S. Weather Bureau.....	65

* *Proceedings*, Am. Soc. C. E., March, 1928, Society Affairs, p. 173.

† *Loc. cit.*, November, 1928, Papers and Discussions, p. 2545.

‡ *Loc. cit.*, March, 1928, Papers and Discussions, p. 685.

§ *Loc. cit.*, October, 1928, Papers and Discussions, p. 2303.

|| *Bulletin 336*, March, 1928, Colorado Experiment Station, Colorado Agricultural Coll., Fort Collins, Colo.

¶ *Engineering News-Record*, June 14, 1928, p. 922.

The results at Otay Reservoir, near San Diego, Calif., have not proved satisfactory, and the apparatus has been moved to another reservoir in that vicinity.

It is hoped that in the spring observations can be undertaken on East Park Reservoir on the Orland Project, U. S. Bureau of Reclamation, now that the Stony Gorge Dam is completed.

Burt Richardson, Physicist at the Norman Bridge Laboratory, at Pasadena, Calif., has prepared a paper on the method of determining evaporation by measuring the sun's radiant energy, on which he has been working for the past two years. This paper has been transmitted to the Secretary of the Society through this Committee.

I (A).—Evaporation from Soils.—The Committee has received two papers which have been accepted by the Society for publication in *Proceedings*. They are: "Evaporation from Soils", by Ralph L. Parshall, Assoc. M. Am. Soc. C. E.; and, "Water Supply from Rainfall on the Valley Floor", by A. L. Sonderegger, M. Am. Soc. C. E.

The work on soil and water evaporation undertaken by the Middle Rio Grande Conservancy District of New Mexico has been discontinued for lack of funds. However, about two years' records have been obtained. These data will be analyzed and presented for publication through this Committee.

II.—Canal Conversions.—J. C. Stevens, M. Am. Soc. C. E., has prepared a re-analysis of about 800 experiments by Messrs. Samuel Finlay and Jorge Altamirana, of Santiago, Chile, showing the effect of varying angles of divergence of the sides of rectangular open channels with velocity conditions less than the critical. The results do not establish a well-defined law, and it is thought best to await more corroborative evidence before drawing conclusions or presenting the data for publication.

III.—Water Movement and Pressure Under Dams.—Attention is called to the paper, "Upward Pressures Under Dams, Experiments by the U. S. Bureau of Reclamation", by Julian Hinds, M. Am. Soc. C. E., previously mentioned.

A study of literature on this subject will reveal that while it is possible to measure, by pipe and pressure gauge, the intensity of pressure at points throughout a dam, little or nothing is known concerning the area over which such intensities apply.

Experiments were made under the direction of D. C. Henny, M. Am. Soc. C. E., at the Bull Run Dam, on Bull Run River, near Portland, Ore., to determine the areas over which pressures in construction joints in concrete might be expected to apply. Although the results were somewhat negative, they are none the less instructive. The results of these experiments and of other research carried on in connection with the construction of this dam will be made the subject of a paper by B. E. Torpen, M. Am. Soc. C. E., to be presented to the Committee.

It is obvious that the determination of pressures and areas affected is a fruitful line of research, and the Committee has stimulated certain lines of study which it hopes will subsequently throw light on this subject.

IV.—Siphon Spillways.—The Fuller Lake Siphon* has been completed with a full set of piezometer connections for field tests. The Nevada Irrigation District, however, lacks funds for the construction of a weir, and it is doubtful, therefore, whether tests can be made as early as previously expected.

The Leaburg Siphons* on the Municipal Hydro-Electric Plant now under construction by the City of Eugene, Ore., will not be in operation until the fall of 1929, but, once completed, excellent facilities exist for tests, as the siphons will be in service every day to a greater or less extent.

Laboratory tests have been promised for several years at the California Institute of Technology, at Pasadena, but thus far these have not materialized. The attempt has been to have a siphon made that could be laid flat and tested as a submerged orifice between two tanks, then raised and tested as a siphon between the same tanks under the same heads. It is believed that siphon losses are in reality only bend and expansion losses in pipes.

V.—Silt.—Attention is called to the paper by T. U. Taylor, M. Am. Soc. C. E., entitled "The Silting of the Lake at Austin, Texas",† which has brought out much valuable discussion on silt problems.

The silt studies by the Middle Rio Grande Conservancy District mentioned in the report for 1927,* have been discontinued for lack of funds. The data gathered, however, will be presented in the form of a paper to the Committee.

VII.—Scouring Below Dams.—This subject has been thoroughly covered and much valuable data have been gathered as a result of the paper, and discussion thereon, by I. C. Steele and R. A. Monroe, Members, Am. Soc. C. E., on "Baffle-Pier Experiments on Models of Pit River Dams".‡

The result of actual scour below existing dams of the U. S. Bureau of Reclamation will be the subject of a paper now under preparation by the engineers of that Bureau. This paper is expected within a year and will be presented to the Society through the Committee.

VIII.—Irrigation Deliveries.—The Committee has been promised a paper by E. S. Lindley, M. Am. Soc. C. E., "Irrigation Deliveries in the Panjab", which it will study with great interest. Mr. Lindley has had many years' experience in irrigation for the British Government and speaks with authority on such subjects.

A paper on the "Consumptive Use of Water in Certain Areas Under Reclamation Projects", by E. B. Debler, M. Am. Soc. C. E., has been promised shortly. It is a sort of companion paper to "Use of Water on Federal Irrigation Projects",§ by the same author.

The use of the so-called "Improved Venturi Flume" has been expanding throughout the West. It is reported that the Fort Lyon Canal, Colorado, has under consideration a measuring flume of this type, 40 ft. in width.

IX.—Lateral Flow Spillways.—An allotment of \$500 has been made by the U. S. Bureau of Reclamation for tests of the spillway at the Tieton Dam on the Yakima Project. In the meantime, certain laboratory experiments are

* *Proceedings*, Am. Soc. C. E., March, 1928, Society Affairs, p. 178.

† *Loc. cit.*, February, 1928, Papers and Discussions, p. 569.

‡ *Loc. cit.*, November, 1927, Papers and Discussions, p. 2189.

§ See Papers and Discussions.

contemplated and promised, having to do with the fundamental theory on which present knowledge of design of such spillways is based.

XI.—Fishways and Fish Screens.—This subject has been taken up by the Committee only recently. A set of modern fishways is being built at the Leaburg Diversion Dam, on the McKenzie River, by the City of Eugene, Ore. There is also to be constructed an oscillating fish screen to keep fish from entering the canal. Construction will not be completed for a year.

The Sub-Committee on Nomenclature has prepared a glossary and a set of standard symbols for writers on irrigation hydraulics. These are now being studied by the Committee at large and a formal report will be prepared in due time covering this phase of its work.

Respectfully submitted,

D. C. HENNY, *Chairman*,
J. C. STEVENS, *Secretary*,
B. A. ETCHEVERRY,
J. L. SAVAGE,
FRED C. SCOBAY,
FRANKLIN THOMAS,
R. L. PARSHALL,
IVAN E. HOUK,
A. L. SONDEREGGER,
R. A. MONROE.

December 7, 1928.

PROGRESS REPORT OF THE SPECIAL COMMITTEE ON SOILS *

TO THE BOARD OF DIRECTION,

AMERICAN SOCIETY OF CIVIL ENGINEERS:

GENTLEMEN.—The Committee on Soils herewith submits its Annual Report for 1928.

The Committee has held three meetings during the year, each of which has been devoted to the discussion of program and resources.

It is the unanimous opinion of the Committee that the work of value which it can contribute in this connection will involve extensive laboratory research and the expenditure of a considerable sum of money. A tentative program was discussed by the Committee and an estimated budget of \$10 000 was adopted as probably the minimum required for carrying out the work as outlined.

Such a sum is probably beyond the reasonable resources of the Society itself, and efforts have been made to secure contributions from outside sources by soliciting various individuals, firms, and corporations who might be presumed to have sufficient interest in the subject, to make donations for the purpose. To date only \$4 050 has been promised, including an expected donation of \$1 000 from Engineering Foundation.

It is the opinion of the Committee that work involving an expenditure of so much money should not be prosecuted until substantially the full amount is in sight and until this is accomplished it is desirable not to make commitments.

In the meanwhile, progress—some of it of a promising nature—is being made by other agencies in the field of soil investigations, and it is probable that the developments will be a distinct aid or guide to the future procedure of the Committee and possibly some duplication of effort will be avoided.

It is the conclusion of the Committee that this be accepted as a report of progress; that the Committee be continued, and that as soon as practicable necessary funds in accordance with this report be made available.

Respectfully submitted,

CHARLES R. GOW, *Chairman*,
Special Committee on Soils.

Committee:

CHARLES R. GOW, *Chairman*,
E. G. HAINES, *Secretary*,
ERNEST P. GOODRICH,
ALLEN HAZEN,
GEORGE W. KITTREDGE.

November 22, 1928.

* Presented at the Annual Meeting, January 16, 1929.

Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 71 and 72 of the Year Book for 1928.

Book Notices*

(January 2 to January 31, 1929)

Domestic Sanitary Engineering and Plumbing. By Frank W. Raynes. Third Edition. Lond. & N. Y., Longmans, Green & Co., 1928. 490 pp., illus., 9 x 6 in., cloth. \$7.50.

This description of plumbing and heating practice for dwellings, especially in England, treats of roofing, piping, sanitary fittings, house drainage and sewage disposal, water supplies, and hot-water heating systems.

Der Eisenwasserbau, Vol. 1; Theorie und Konstruktion der beweglichen Wehre. By H. Kulka. Berlin, Wilhelm Ernst & Sohn, 1928. 323 pp., illus., diagrams, 10 x 7 in., paper. 29.-r.m.

This volume is devoted to movable steel weirs. It explains the mathematical principles of hydrodynamics and the theoretical principles for the design of structures. It treats of the hydraulic and mechanical peculiarities of various weirs, as well as economics.

Nomographie. By M. Fréchet and H. Roullet. Paris, Armand Colin, 1928. 208 pp., diagrams, 7 x 5 in., paper. 9 fr.

This beginner's manual on the construction and use of nomographs, explains the principles clearly and shows how they may be applied in practice. It is the joint work of a mathematician and an engineer.

Skyscrapers and the Men Who Build Them. By W. A. Starrett, M. Am. Soc. C. E. N. Y., Charles Scribner's Sons, 1928. 347 pp., illus., port., 8 x 6 in., cloth. \$3.50.

Colonel Starrett's book will not only interest engineers, but a much wider circle of readers. In an unusually readable style, he tells how the skyscraper originated, how it became popular, and how it is financed and built to-day.

Stein- und Betonbrücken. By E. Richter. Berlin, u. Lpz., Walter de Gruyter & Co., 1928. 108 pp., illus., diagrams, 6 x 4 in., cloth. 1.50 r.m.

This book presents the rudiments of the design and construction of deck bridges in masonry.

Theory of Probability. By William Burnside. Cambridge, England, Univ. Press (and N. Y., Macmillan Co.), 1928. 106 pp., 9 x 6 in., cloth. \$3.50.

Among the topics are direct and indirect methods of calculating probabilities, methods of approximation, the probability of causes, probabilities connected with geometrical causes, the theory of errors, and Gauss' law.

* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, <i>Proceedings</i> (Y.)	Detroit
A. I. E. E.....	American Institute of Electrical Engineers <i>Journal</i> (M.)	New York
A. R. E. A.....	American Railway Engineering Association, <i>Proceedings</i> (Y.)	Chicago
A. S. T. M.....	American Society for Testing Materials, <i>Proceedings</i> (Y.)	Philadelphia
Am. Soc. C. E.....	American Society of Civil Engineers, <i>Proceedings</i> (M.)	New York
Am. Soc. Mun. Impvts.	American Society for Municipal Improvements, <i>Proceedings</i> (Y.)	New York
Am. W. W. Assoc.....	American Water Works Association, <i>Journal</i> (M.)	Baltimore
Am. Wood Pres. Assoc.	American Wood Preservers Association, <i>Proceedings</i> (Y.)	Chicago
Ann. P. et C.....	Annales des Ponts et Chaussées (Bl-M.)	Paris
Ann. T. P. Belg.....	Annales des Travaux Publics de Belgique (Bl-M.)	Brussels
Assoc. Ing. Gand.....	Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Ghent
Bost. Soc. C. E.....	Boston Society of Civil Engineers, <i>Journal</i> (M.)	Boston
Can. Engr.....	Canadian Engineer (W.)	Toronto
City Plan.....	American City Planning Institute (Q.)	Boston
Commwth. Engr.....	Commonwealth Engineer (M.)	Melbourne
Conc.....	Concrete (M.)	Chicago
Cornell C. E.....	Cornell Civil Engineer (M.)	Ithaca
Dock & Harbour.....	Dock and Harbour Authority (M.)	London
Eng.....	Engineering (W.)	London
Eng. & Contr.....	Engineering and Contracting (M.)	Chicago
Eng. Inst. Can.....	Engineering Institute of Canada, <i>Journal</i> (M.)	Montreal
Eng. N. R.....	Engineering News-Record (W.)	New York
Engr. Soc. W. Pa.....	Engineers' Society of Western Pennsylvania, <i>Journal</i> (M.)	Pittsburgh
Engr.....	Engineer (W.)	London
Engrs. & Eng.....	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	Philadelphia
Gas und Wasser.....	Gas und Wasserfach	Munich
Gen. Civ.....	Le Génie Civil (W.)	Paris
Gesundh. Ing.....	Gesundheits Ingenieur (W.)	Munich
Inst. C. E.....	Institution of Civil Engineers Minutes of Proceedings (Q.)	London
Inst. Mun. & Co. Engrs.	Institution of Municipal and County Engineers, <i>Journal</i> (W.)	London
Int. Ry. Cong. Assoc.	International Railway Congress Association, <i>Bulletin</i> (M.)	Brussels
Land. Arch.....	Landscape Architecture (Q.)	Boston
Mech. Eng.....	Mechanical Engineering (M.), <i>Journal of the American Society of Mechanical Engineers</i>	New York
Mil. Engr.....	Military Engineer (Bl-M.)	Washington
Min. & Metal.....	Mining and Metallurgy (M.), American Institute of Mining Engineers	New York
Mun. N. & W. W.....	Municipal News & Water Works (M.)	Chicago
N. E. W. W. Assoc.....	New England Water Works Association, <i>Journal</i> (Q.)	Boston
N. Y. R. R. Club.....	New York Railroad Club, <i>Proceedings</i> (M.)	Brooklyn
Oest. Ing. Arch. Ver.....	Oesterreichischer Ingenieur und Architekten Verein, <i>Zeitschrift</i> (F.)	Vienna
Power.....	Power (W.)	New York
Public W.....	Public Works (M.)	New York
Rev. Gen.....	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Age.....	Railway Age (W.)	New York
Ry. Eng. & Main.....	Railway Engineering and Maintenance (M.)	Chicago
R. & S.....	Roads and Streets (M.)	Chicago
Schw. Bauz.....	Schweizerische Bauzeitung (W.)	Zurich
Sci. Am.....	Scientific American (M.)	New York
Soc. Ing. Civ. Fr.....	Société des Ingénieurs Civils de France, <i>Mémoires et Comptes Rendus</i> (Q.)	Paris
Tech. Gemein.....	Technisches Gemeindeblatt (F.)	Berlin
Ver. den. Ing.....	Verein deutscher Ingenieure, <i>Zeitschrift</i> (W.)	Berlin
West. Constr. N.....	Western Construction News (F.)	San Francisco
West. Ry. Club.....	Western Railway Club, <i>Proceedings</i> (M.)	Chicago
West. Soc. Engrs.....	Western Society of Engineers, <i>Journal</i> (M.)	Chicago
Zeit. Bau.....	Zeitschrift für Bauwesen (Q.)	Berlin
Z. d. Bauver.....	Zentralblatt der Bauverwaltung (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

A. Applied Sciences

a. Processes of Calculation

2. Graphical and Nomographical Processes

The Graphical Solution of a Correlation Table.* Weston S. Evans. Am. Soc. C. E. Jan., '29.

3. Stresses and Strains

Ueber die Knickung gerader Stäbe durch Eigengewicht und Einzellasten.* (On the Breaking of Straight Rods Due to Their Own Weight and Single Loads.) Karl Karas. Zeit. Bau. Sept., '28.

B. Applied Mechanics

a. Mechanics of Solids (Strength of Materials)

1. Processes of Measurement and Methods of Testing

Structural Materials Testing Laboratory of the Melbourne University.* R. R. Blackwood. Comwith. Engr. Nov., '28.

3. Jointed Systems

Elastic Equilibrium in the Theory of Structures.* H. S. Richmond. Am. Soc. C. E. Jan., '29.

4. Riveted Systems

Rahmenträger (System Vierendeel) mit elastischen Diagonalen.* (Lattice Girders,—Vierendeel System—with Elastic Diagonals.) Felix Kann. Z. d. Bauver. Serial beginning Dec. 5, '28.

6. Heterogeneous Solids (Reinforced Materials)

Studies of Shear in Reinforced Concrete Beams.* T. D. Mylrea. Am. Soc. C. E. Jan., '29.

b. Hydraulics

1. Processes of Measurement

Need of a National Hydraulic Research Laboratory.* Blake R. Van Leer. Eng. N. R. Jan. 10, '29.

2. Physical Hydraulics

Zur Frage einer allgemeinen Abflussformel.* (On the Question of a General Run-Off Formula.) R. Winkel. Z. d. Bauver. Nov. 28, '28.

Studien über Schwingungen von Kreisplatten und Ringen.* (Studies on Vibrations of Circular Plates and Rings.) W. Hort. Schw. Bauz. Serial beginning Dec. 8, '28.

3. Industrial Hydraulics

Paugan Hydro Development in Operation.* Can. Engr. Nov. 27, '28.

Interstate River Compacts and Their Place in Water Utilization. Delph E. Carpenter. Am. W. W. Assoc. Dec., '28.

New Theory for the Centrifugal Pump.* Discussion: Allen F. Sherzer. Am. Soc. C. E. Jan., '29.

Saluda, A 300 000-Hp. Hydro Development.* Power Jan. 15, '29.

Second Hydro-Electric Plant on Chippewa River.* Eng. N. R. Jan. 17, '29.

Fortschritte im Bau von Wasserturbinen. Kaplan-und Propellerturbinen.* (Progress in the Construction of Water Turbines. Kaplan and Propeller Turbines.) Oesterlen. Ver. deu. Ing. Dec. 15, '28.

Die kombinierten Kraftwerke Klosters-Küblis und Davos-Klosters der Bündner Kraftwerke.* (The Combined Klosters-Küblis and Davos-Klosters Power Station of the Bündner Power Plant.) Robert Moor. Schw. Bauz. Serial beginning Dec. 1, '28.

4. Dams

The Arapuni Dam, New Zealand.* Comwith. Engr. Nov., '28.

A Structural Gravity Dam.* Mason D. Pratt. West. Constr. N. Dec. 10, '28.

Engineering Foundation Committee on Arch Dam Investigation.* Discussion: C. Guidi, A. Nadal, Nils Buer, and William M. Kinney. Am. Soc. C. E. Jan., '29.

Der höchste Staudamm der Welt.* (The Highest Impounding Dam in the World.) Haller. Z. d. Bauver. Dec. 19, '28.

Die St. Francis-Dammbruchkatastrophe von Los Angeles.* (The St. Francis Dam Catastrophe of Los Angeles.) J. Mandelker. Oest. Ing. Arch. Ver. Dec. 21, '28.

c. Pneumatics

2. Physical Pneumatics

Final Report of the Committee of the Structural Division on Florida Hurricane.* Discussion: E. W. Stern. Am. Soc. C. E. Jan., '29.

3. Industrial Pneumatics

Fan Types and Applications.* H. G. Hagen. West. Soc. Engrs. Dec., '28.

C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, Timber, Gravel, etc.

The Corrosive Attack of Moorland Water on Concrete. W. T. Halcrow and Others. (Paper read before Inst. Water Engrs.) Engr. Dec. 14, '28.

This Material—Concrete. Nathan C. Johnson. Eng. N. R. Serial beginning Jan. 24, '29.

Colmatage par Injections de Ciment du Radier de la Forme de Radoub de Sidi-Abdallah.* (Making the Apron of the Sidi-Abdallah Graving Dock Tight by the Injection of Cement.) Garbe and Buvoilo. Ann. P. et C. Sept., '28.

f. Rock Excavation, Mining, Rock Removal

Ingenieurbauten im Bergbau über und unter Tage.* (Engineering Constructions in Mining on the Surface and Underground.) von Stegmann. Ver. deu. Ing. Dec. 15, '28.

g. Execution of Works, Specifications

Construction Notes on Villa Riviera, Long Beach, California.* H. C. Whittlesey. West. Constr. N. Dec. 10, '28.

Bauen in Winter und die Praxis in Nordamerika.* (Winter Construction and Its Practice in North America.) H. Griesel. Ver. deu. Ing. Dec. 15, '28.

2. Of Concrete

Reconditioning the Wall of the Yale Bowl.* Theodore Crane. Eng. N. R. Jan. 24, '29.

4. Of Metal

Steel Joists in Building Construction. Frank Burton. Can. Engr. Dec. 25, '28.

The Design of Tall Building Frames to Resist Wind.* Discussion: David A. Molitor, James A. Orrell, and H. E. Eckles. Am. Soc. C. E. Jan., '29.

Flame Cutting of Structural Steel. S. W. Miller and J. R. Dawson. (Paper read before Am. Inst. Steel Constr.) Can. Engr. Jan. 15, '29.

Guniting Steel True to Cross-Section and Alignment.* Eng. N. R. Jan. 17, '29.

5. Of Reinforced Concrete

Cement Gun Enlarges Column Sections for Additional Load.* A. D. Hilborn. Eng. N. R. Dec. 27, '28.

h. Foundations, Bridge Piers and Abutments

Bridge Over the Murray River at Yarrowonga.* W. D. Chapman. Comw. Engr. Nov., '28.

The Science of Foundations—Its Present and Future.* Discussion: S. P. Wing, M. L. Enger and Albert Jorgensen. Am. Soc. C. E. Jan., '29.

j. Piles and Pile-Driving

50-Ft. Concrete Bridge Piles Driven Six Days After Pouring.* H. G. Farmer. Eng. N. R. Dec. 27, '28.

k. Tunnels and Tunneling-Shield

A Year's Operating Experience with the Holland Vehicular Tunnel. Ole Singstad. Eng. N. R. Dec. 27, '28.

D. Highways

c. Construction

Developments in Use of Tar for Roads. Walter Buehler. (Paper read before Am. Soc. Mun. Impvts.) Can. Engr. Nov. 27, '28.

State Forces Build Michigan Highways. M. O. Hammer. R. & S. Dec., '28.

Cut Back Asphalt and Other Surface Treating Materials. Herbert Spencer. R. & S. Dec., '28.

Brief History of Pennsylvania Road Development.* Samuel Eckels. (Paper read before Penn. Automotive Assoc.) R. & S. Dec., '28.

Some Considerations in Selecting Roadway Types.* C. N. Connor. R. & S. Dec., '28.

Granite as a Bridge Pavement. Clarence D. Pollock. (Paper read before Am. Soc. Mun. Impvts.) Public W. Dec., '28.

Concrete Street Paving Specifications. L. S. Trainor. (Paper read before Am. Soc. Mun. Impvts.) Public W. Dec., '28.

Reconstruction of Vermont Highways.* Bost. Soc. C. E. Dec., '28.

History of Paving of Montgomery Street, San Francisco.* Philip Schuyler. West. Constr. N. Dec. 10, '28.

Application of Asphalt Stability Test.* Prevost Hubbard. (Paper read before Annual Asphalt Paving Conference.) Can. Engr. Dec. 25, '28.

Use of Asphalt Filler in Brick Pavements. H. J. Kirk. (Paper read before Annual Asphalt Paving Conference.) Can. Engr. Dec. 25, '28.

Bayshore Boulevard, San Francisco.* Philip Schuyler. West. Constr. N. Dec. 25, '28.

Building the "Road-to-the-Sea" in Colombia.* John H. Caton. Eng. N. R. Dec. 27, '28.

Asphalt Road Construction and Service Problems.* (Papers read before Asphalt Pav. Conference.) Eng. N. R. Dec. 27, '28.

Granite Setts in and Around London—Some Factors Affecting Their Wear.* Bernard H. Knight. Inst. Mun. & Co. Engr. Dec. 27, '28.

Foundations and Drainage of Highways. Discussion: Albert C. Rose. Am. Soc. C. E. Jan., '29.

Street Designing for Various Uses.* Discussion: W. W. DeBerard. Am. Soc. C. E. Jan., '29.

Concrete Pavement Over Poor Sub-Grade at Port Newark, New Jersey. Discussion: W. C. Hammatt. Am. Soc. C. E. Jan., '29.

Design and Construction of Concrete Pavements. Discussion: Clifford Older. Am. Soc. C. E. Jan., '29.

How Road Types May Be Improved.* A Symposium. Eng. N. R. Jan. 3, '29.

Meeting Volume Requirements Through Increased Efficiency of Road Construction.* C. M. Hathaway. Eng. N. R. Jan. 5, '29.

Flexible Bases and Pavement Costs. Chris. P. Jensen. Can. Engr. Jan. 15, '29.

La Modernisation des Chaussées des Routes Nationales de France. Modernizing the Roads of the National Highways of France. Le Gavrian and Lipmann. Ann. P. et C. Sept., '28.

e. Street Cleaning, Dust Prevention, Snow Removal

Removing Snow in Cities by Machinery. H. S. Greene. (Paper read before Am. Soc. Mun. Impvts.) Can. Engr. Dec. 25, '28.

g. Machinery and Tools

Machinery's Part in Roadbuilding.* Lion Gardiner. Eng. N. R. Jan. 3, '29.

h. Vehicles, Automobiles, Traffic

The Place of Highways in Regional Planning at Buffalo, N. Y.* (From Bulletin issued by Erie County Highway Dept.) R. & S. Dec., '28.

- The Engineer's Part in Making the Highway Safe. Discussion: E. W. James, Louis P. Blum, C. N. Haggart, H. J. Kirk, W. W. Crosby, Victor A. Endersby, and G. C. Dillman. Am. Soc. C. E. Jan., '29.
- Serving the Traveler by More Attractive Roads.* Edward N. Hines. Eng. N. R. Jan. 3, '29.
- Our Present Road System; How It Was Created and How It Grew.* Thomas H. MacDonald. Eng. N. R. Jan. 3, '29.
- What We Know of Traffic. J. Gordon McKay. Eng. N. R. Jan. 3, '29.

E. Bridges, Viaducts and Arches

b. Iron and Steel Bridges and Viaducts

- Continuous Truss Highway Bridge Over Missouri River.* L. J. Sverdrup. Eng. N. R. Jan. 17, '29.
- La Reconstruction du Pont de l'Europe au-dessus des Voies de la Gare Saint-Lazare, à Paris.* (The Reconstruction of the Europa Bridge Over the Tracks of Saint-Lazare Station in Paris.) Gen. Civ. Dec. 8, '28.

c. Stone Bridges and Viaducts

- Crown Stresses in a Skew Arch. Discussion: J. Charles Rathbun. Am. Soc. C. E. Jan. '29.

d. Concrete and Reinforced Concrete Bridges and Viaducts

- Eighth Street Concrete Bridge and Viaduct, Pueblo, Colorado.* D. P. Gaymon. West Constr. N. Dec. 25, '28.
- 5-Mile James River Bridge Built in 13 Months.* Eng. N. R. Jan. 10, '29.
- Le Pont en Béton de la Caille sur le Torrent des Ussets (Haute-Savoie). (The Caille Bridge of Concrete Over the Torrent des Ussets (Upper Savoy).) Gen. Civ. Dec. 29, '28.

g. Swing, Bascule, Lift, Floating, Oscillating Bridges, Travelling Cranes

- Lift Span to Replace Duluth Ferry Bridge.* Ernest E. Howard. Eng. N. R. Dec. 27, '28.
- Failure of Counterweight Tower Caused Bridge Collapse.* Eng. N. R. Jan. 10, '29.

h. Computations, Tests, etc.

- Continuous Beams Over Three Spans.* Discussion: T. F. Hickerson, and John I. Parcel. Am. Soc. C. E. Jan., '29.
- Note sur le Règlement du 10 Mai 1927 pour le Calcul et les Epreuves des Ponts Métalliques.* (Note on the Regulations of May 10, 1927 for the Calculation and Tests of Metallic Bridges.) Robert Lévi. Rev. Gen. Dec., '28.

F. Inland Waters and Waterways

b. Canals (General Articles)

- Le Canal de Saint Quentin, Son Histoire, Sa Réfection, Son Développement.* (Saint Quentin Canal, Its History, Its Reconstruction, Its Development.) L. Durringer. Ann. P. et C. Serial beginning Sept., '28.

c. Regulation of Waterways, Volumes of Discharge, Freshets, Floods, Soundings

- Hydraulic Studies and Operating Results on the Miami Flood Control System.* Discussion: K. L. DeBlois, E. S. Lindley, C. S. Jarvis, and E. W. Lane. Am. Soc. C. E. Jan., '29.
- Stream Flow in General Terms.* Discussion: R. D. N. Simham. Am. Soc. C. E. Jan., '29.
- Flood Control with Special Reference to the Mississippi River.* Discussion: C. McD. Townsend, H. C. Frankenfield, E. F. McCarthy, William Kelly, Arthur E. Morgan, Marcel Garsaud, C. E. Grunsky, and Sherman M. Woodward and Floyd A. Nagler. Am. Soc. C. E. Jan., '29.
- Mississippi River Flood Control.* C. S. Hill. Eng. N. R. Serial beginning Jan. 17, '29.

d. Diverting Dams, Locks, Lifts, Elevators, Inclined Planes

- Springbank Recreation Dam at London, Ont.* Eng. N. R. Dec. 27, '28.
- Bear-Trap and Chanoine Weirs on the Ohio River.* Engr. Dec. 28, '28.
- Die Sparschleuse bei Bolzum. (Water Saving Lock at Bolzum.) Goetzke. Ver. deu. Ing. Dec. 15, '28.

G. Maritime Works

b. Management and Protection of Coasts, Beaches, Dunes

- Inlets on Sandy Coasts. Discussion: Thorndike Saville and Earl I. Brown. Am. Soc. C. E. Jan., '29.

d. Roads and Outer Harbors. Dikes and Jetties. Breakwaters

- Zur Berechnung der schleswig-holsteinischen Deiche um 1700 nach Arbeitsleistung.* (On the Calculation of the Schleswig-Holstein Dikes at About 1700 According to the Work Done.) G. Jacoby. Zeit. Bau. June, '28.

g. Dredges and Dredging, Force Pumps, Refloating and Removing Wrecks, Ice-Breakers

- The Salvage and Reconstruction of the M. V. "Lochmonar."* James Harney. (Paper read before Belfast Assoc. Engrs.) Eng. Jan. 4, '29.

h. Wharves, Mooring Buoys, Harbor Equipment

- Der Kalkal am Reiherstiegshafen in Harburg-Wilhelmsburg.* (The Potash Dock at the Reiherstieg Port in Harburg-Wilhelmsburg.) Jurisch. Z. d. Bauver. Nov. 28, '28.

i. Harbors

- Vancouver Harbour.* Engr. Dec. 21, '28.

H. Railroads, Street and Interurban Railways, Automobiles, Aeronautics

a. Railroads

1. General Articles

The Edgewood Cut-Off, I. C. R. R.* A. F. Blaess. West. Soc. Engrs. Dec., '28.
Inauguration du Chemin de Fer de Rothau à Saales et à Saint-Dié.* (Inauguration of the Railway from Rothau to Saales and to Saint-Dié.) Rev. Gen. Dec., '28.

3. Roadbed (Grading Construction Work)

Ballast-Cleaning Machine on the Pennsylvania Railroad.* Eng. N. R. Jan. 24, '29.
Ueber die Rutschungen in Rosengarten bei Frankfurt a. d. Oder.* (On the Landslides at Rosengarten near Frankfurt on the Oder.) Karl Maria Backofen. Zeit. Bau. Serial beginning Aug., '28.

5. Signals and Safety Apparatus

Burlington Installs Centralized Control for Ends of Double Track.* Ry. Age Dec. 29, '28.
Remote Control Facilities Save Time on Southern Pacific.* Ry. Age Jan. 12, '29.
Stopping Trains by Use of the Conductor's Valve.* G. E. Terwilliger. Ry. Age Jan. 19, '29.

6. Rolling Stock

Plant for Cleaning Passenger Trains, Eastern Railway, France.* J. T. Burton Alexander. Engr. Dec. 14, '28.

Three-Cylinder Narrow-Gauge Locomotives for Columbia.* Engr. Dec. 21, '28.

World's Largest Locomotive Built for the Northern Pacific.* Ry. Age Dec. 29, '28.

7. Use of Electricity

How an Operating Man Views the Virginian Electrification.* F. L. Johnson. (From paper read before Nat'l Elec. Light Assoc.) Ry. Age Jan. 19, '29.

Le Wagon-Atelier de Soudure de la Compagnie des Chemins de Fer de Paris à Lyon et à la Méditerranée.* (The Welding Car of the Compagnie des Chemins de Fer de Paris à Lyon et à la Méditerranée.) Portal. Rev. Gen. Dec., '28.

Les Locomotives Electriques du Great Indian Peninsula Railway.* (The Electric Locomotives of the Great Indian Peninsula Railway.) Ch. Dantin. Gen. Civ. Dec. 22, '28.

8. Stations, Terminals, Engine Houses, Shops

Cleveland Union Station Project Far Advanced.* Ry. Age Dec. 29, '28.

Single-Hump Freight Yard, Texas & Pacific Ry.* Eng. N. R. Jan. 10, '29.

Pennsylvania Builds Modern Produce Terminal at Philadelphia.* Ry. Age Jan. 12, '29.

Great Western Follows First Principles in Buying.* A. C. Simmons. Ry. Age Jan. 19, '29.

9. Technical and Commercial Use

Seaboard Extends Motor Coach Operations in Florida.* Ry. Age (Motor Trans. Sec.) Dec. 22, '28.

Long Haul Transportation by Motor Coach.* W. E. Travis. (Paper read before Soc. Automotive Engrs.) Ry. Age. (Motor Trans. Sec.) Dec. 22, '28.

Idling Three Cars Per Minute.* Ry. Age Dec. 29, '28.

c. Automobiles

1. Steam Automobiles

Le XXIIe Salon de l'Automobile et du Cycle. Troisième Série (Paris, 15-25 novembre 1928).*

(The XXII Automobile and Cycle Salon. Third Series (Paris, November 15-25, 1928).)

G. Delanghe. Gen. Civ. Dec. 8, '28.

f. Aeronautics

1. General Articles

Progress in Aviation. Symposium. Engrs. & Eng. Dec., '28.

American Aircraft in Canada.* Eng. Dec. 14, '29.

Progress in Aeronautics. Mech. Eng. Jan., '29.

Le Salon allemand d'Aéronautique. (Berlin, 7-28 octobre, 1928).* (The German Aeronautic Salon. (Berlin, October 7-28, 1928).) R.-J. de Marolles. Gen. Civ. Dec. 15, '28.

Technische Fortschritte beim Rhön-Segelflugwettbewerb 1928.* (Technical Progress at the Rhone Glider Competition of 1928.) M. v. Pilgrim. Ver. deu. Ing. Dec. 22, '28.

3. Aeroplanes

The Rolls-Royce "F" Type Aero Engine. Eng. Dec. 28, '28.

The Design of Airplane Wing-Beams.* Discussion: John E. Younger and Joseph S. Newell. Am. Soc. C. E. Jan., '29.

Dynamische Festigkeit von Flugzeug-Konstruktionsteilen.* (Dynamic Strength of Structural Parts of Airplanes.) Paul Brenner. Ver. deu. Ing. Dec. 22, '28.

4. Aerodromes and Landing Fields

Drainage of Mills Field Municipal Airport, San Francisco.* Lawrence J. Archer. West. Constr. N. Dec. 25, '28.

An Improved Airship Mooring System. Engr. Dec. 28, '28.

I. Municipal Water Works, Agricultural Engineering, Irrigation

a. General Articles

Water Works Improvements on a Cost Plus Basis. H. V. Pedersen. Am. W. W. Assoc. Dec., '28.

Evaluation of Water Rights. Discussion: S. H. Stivers. Am. Soc. C. E. Jan., '29.

b. Hydrology, Water Resources

Interstate River Compacts and Their Place in Water Utilization. Delph E. Carpenter. Am. W. W. Assoc. Dec., '28.

The Water Supply Situation in Kentucky. E. E. Jacobson. Am. W. W. Assoc. Dec., '28.

c. Dams and Reservoirs

- The Wyangala Dam on the Lachlan River, N. S. W.* H. H. Dare. *Comwlth. Engr.* Nov. '28.
 Bull Run Dam for Portland Water Works.* K. L. Parker. *West. Constr. N. Dec. 25, '28.*
 Upward Pressures Under Dams: Experiments by the United States Bureau of Reclamation.*
 Discussion: E. W. Lane, C. E. Grunsky and Julian Hinds. *Am. Soc. C. E. Jan., '29.*
 Building a Concrete Reservoir for Portsmouth, Ohio.* R. J. Turrell. *Eng. N. R. Jan. 17, '29.*
 Der höchste Staudamm der Welt.* (The Highest Impounding Dam in the World.) Haller.
 Z. d. Bauver. Dec. 19, '28.
 Die St. Francis-Dammbruchkatastrophe von Los Angeles.* (The St. Francis Dam Catastrophe of Los Angeles.) J. Mandelker. *Oest. Ing. Arch. Ver. Dec. 21, '28.*

d. Analysis and Purification of Water

- Best Rate of Water Filtration. R. B. Simms. *Can. Engr.* Nov. 27, '28.
 Hydrogen Sulfide Removal and Water Softening at Beverly Hills, Cal.* R. L. Derby. *Am. W. W. Assoc. Dec., '28.*
 Six Years' Operation of Filter Plant at Peterborough, Ontario, Canada.* R. L. Dobbin. *Am. W. W. Assoc. Dec., '28.*
 Water Supply Purification in Tennessee. Howard R. Fullerton. *Am. W. W. Assoc. Dec., '28.*
 Progress in Chlorination of Water, 1927-1928.* L. H. Enslow. *Am. W. W. Assoc. Dec., '28.*
 Chlorine Absorption as a Substitute for Oxygen Consumed.* Harrison Hale, May Sullivan and Charles B. DeWitt. *Am. W. W. Assoc. Dec., '28.*
 Hygiene of Public Swimming Baths. A. L. Thomson. (Paper read before Royal Assoc. Scotland.) *Can. Engr. Dec. 4, '28.*
 Scarborough Filtration Plant Extension.* W. D. Proctor. *Can. Engr. Dec. 4, '28.*
 (trophe of Los Angeles.) J. Mandelker. *Oest. Ing. Arch. Ver. Dec. 21, '28.*

e. Distribution of Water

- Motor Driven Centrifugal Pumps.* R. L. Baldwin. *Am. W. W. Assoc. Dec., '28.*
 Hydrants and Valves. J. I. Prugh. *Am. W. W. Assoc. Dec., '28.*
 East Bay Aqueduct.* F. W. Hanna. *West. Constr. N. Dec. 25, '28.*
 Sequoia and Wildcat Distributing Aqueduct.* Philip Schuyler. *West. Constr. N. Dec. 25, '28.*
 Measurement of Water Through Slide Gates.* *West. Constr. N. Dec. 25, '28.*
 Some Maintenance Problems of a Water Engineer.* G. E. Shaw. *Engr. Dec. 28, '28.*

J. Sewerage. Sewage and Refuse Disposal**a. Sewers and Drains**

- County Sewer District Works in Ohio and Assessment of Cost According to Benefits. Discussion: O. Bonney and R. F. MacDowell. *Am. Soc. C. E. Jan., '29.*

b. Sewage Disposal, Purification

- Sewage Treatment Plant at the Grand Canyon National Park.* H. B. Hommon. (*Public Health Reports, U. S. Public Health Service.*) *West. Constr. N. Dec. 10, '28.*
 Digesting Sewage Sludge at Its Optimum pH and Temperature.* C. E. Keefer and Herman Kratz, Jr. *Eng. N. R. Jan. 17, '29.*
 Moderne Abwasserreinigungsanlagen in England und Amerika und ihre Bedeutung für die deutsche Städtentwässerung.* (Modern Sewage Purification Plants in England and America, and Their Importance in German City Drainage.) Fritz Langbein. *Gesund. Ing. Nov. 17, '28.*

K. Heat Engines**b. Steam Turbines**

- 160 000-Kw. Steam Turbo-Generator for the Hell Gate Power Station, New York.* *Eng. Serial beginning Jan. 4, '29.*

c. Gas and Oil Engines

- Die Gasturbine von C. Lorenzen.* (The C. Lorenzen Gas Turbine.) A. Heller. *Ver. deu. Ing. Dec. 22, '28.*

L. Electricity**b. Distribution and Transmission of Electricity****1. Power Plants**

- Die Maschinenanlage des Kraftwerks Lilla Edet.* (The Machinery Installation at the Lilla Edet Power Plant.) A. Ekwall and H. Munding. *Ver. deu. Ing. Dec. 22, '28.*

d. Mechanical Uses of Electricity**1. Electric Motors**

- A-C. Elevator Motors of the Squirrel-Cage Type.* E. E. Dreese. *A. I. E. E. Jan., '29.*

3. Welding

- Structural Welding Experimental Study.* Peter Gillespie. *Can. Engr. Jan. 15, '29.*
 La Résistance Élastique des Joints Soudés.* (The Elastic Strength of Welded Connections.) A. Goelzer. *Gen. Civ. Serial beginning Dec. 22, '28.*
 Die Temperaturverteilung in der Acetylen-Schweißflamme.* (The Distribution of Temperature in the Acetylene Welding-Flame.) F. Henning and C. Tingwaldt. *Ver. deu. Ing. Dec. 15, '28.*

f. Signals and Communication

Carrier Telephone System for Short Toll Circuits.* H. S. Black and Others. A. I. E. E. Jan., '29.

M. Architecture

a. Educational, Government and Scientific Buildings

Um- und Erweiterungsbau der Staatsoper in Berlin.* (Reconstruction and Enlargement of the State Opera House in Berlin.) Fürstenau. Zeit. Bau. July, '28.
 Die Ausstellungs- und Museumsbauten am rechten Rheinufer in Köln.* (The Exhibition and Museum Buildings on the Right Side of the Rhine in Cologne.) Zeit. Bau. Aug., '28.
 Um- und Aufbau des alten Zeughauses Zürich.* (Alteration and Reconstruction of the Old Zurich Arsenal.) Schw. Bauz. Dec. 1, '28.
 Lyzeumsneubau in Hamburg.* (New Lyceum Building in Hamburg.) Hans Bahn. Z. d. Bauver. Dec. 5, '28.
 Die Bauten des "Saffa." Schweizer. Ausstellung für Frauen-Arbeit, Bern, 1928. (The "Saffa" Constructions. Swiss Exhibition for Women's Work, Bern, 1928.) Schw. Bauz. Dec. 15, '28.
 Reform-Realgymnasium Geisenheim-Rüdesheim.* (Geisenheim-Rüdesheim Reform "Realgymnasium.") Karl Beckmann. Z. d. Bauver. Dec. 19, '28.

b. Business and Commercial Buildings

Die Grossmarkthalle in Frankfurt a. M.* (The Large Market Hall in Frankfurt a. M.) Gustav Lampmann. Zeit. Bau. Nov., '28.
 Les Nouveaux Abattoirs Municipaux de Lyon.* (The New Municipal Abattoirs of Lyon.) C. Chalumeau. Gen. Civ. Dec. 15, '28.

c. Residences, Hotels

Les Matériaux pour les Habitations à Bon Marché et Leurs Qualités Hygiéniques. (Materials for Cheap Houses and Their Hygienic Qualities.) Paul Razous. Gen. Civ. Serial beginning Dec. 15, '28.

e. Hospitals and Asylums

Die Neubauten der Universitäts-Kinderklinik und der Universitätsklinik für Ohren-, Nasen- und Halskrankheiten in Marburg a. d. Lahn.* (The New Buildings for the University Children's Clinic and the University Clinic for Ear, Nose and Throat Diseases in Marburg a. d. Lahn.) M. Spielberg. Zeit. Bau. Sept., '28.

g. Other Buildings

Design and Construction of the Atlantic City Convention Hall.* Samuel L. Ware. Bost. Soc. C. E. Dec., '28.
 Das Stadion in Nürnberg.* (The Stadium in Nürnberg.) Z. d. Bauver. Dec. 12, '28.

i. Fire Protection

The Relation Between Earthquakes and Engineering Substructures.* Discussion: B. F. Jakobsen. Am. Soc. C. E. Jan., '29.

x. Miscellaneous

A Loudness Scale.* Wallace Waterfall. Eng. N. R. Jan. 10, '29.
 Balthasar Neumann und seine Arbeitsweise.* Balthasar Neumann and his Working Methods.) Adolf Zeller. Zeit. Bau. June, '28.

O. Administration. Legislation. Economics. Statistics

b. Economic Questions of a General Character, Valuations

Problems in Valuation and Rate Making.* E. E. Bankson. Am. W. W. Assoc. Dec., '28.
 Uniform Accounting for Water Works. R. B. F. Chisholm. Am. W. W. Assoc. Dec., '28.
 Letting Construction Work by Competitive Bidding. Discussion: L. C. Wason, Charles J. Bennett, Charles F. Chase, William E. Rudolph, Lazarus White, A. E. W. Idron, A. Jordan Bernstein, Ernest Nicholson, Arthur W. Consoer and F. H. Stephenson. Am. Soc. C. E. Jan., '29.

d. Administrative and Financial Management of Means of Communication

2. Routes and Roads

Road Economics. J. R. Kemp. (Abstract of paper read before Economic Soc.) Comwith. Engr. Nov., '28.

State Forces Build Michigan Highways.* M. O. Hammer. R. & S. Dec., '28.
 Money for Roads. T. R. Agg. Eng. N. R. Jan. 3, '29.

5. Railroads and Street Railways

Depreciation as a Factor in Railway Valuation. Edwin F. Wendt. (From Bulletin 310, Am. Ry. Eng. Assoc.) Ry. Age Jan. 19, '29.

Q. Surveying and Geodesy

Standard City Engineering Surveys. Discussion: E. O. Heaton, W. N. Brown, T. P. Pendleton, Arthur L. Vedder, J. K. Finch, Charles E. Wells, and W. R. Schreiner. Am. Soc. C. E. Jan., '29.

S. City Planning

Base Maps for Regional Planning.* Discussion: Harold M. Lewis, C. H. Birdseye, H. J. Sherman, and Russell V. Black. Am. Soc. C. E. Jan., '29.

Colonia Solana, A Subdivision of the Arizona Desert.* Stephen Child. Land. Arch. Oct., '28.

T. Oil and Oil Engineering

Aufgaben der Erdölförderung.* (Problems in Petroleum Production.) O. Schwenninger. Ver. deu. Ing. Dec. 22, '28.

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers. A Chicago office is maintained in co-operation with the Western Society of Engineers, and a San Francisco office, in co-operation with the Engineers' Club of San Francisco and the California Section of the American Chemical Society. The Service is available only to the several memberships and is maintained by contributions from the Societies and their individual members who are directly benefited.

Offices.—Eastern Office, 31 West 39th Street, New York, N. Y., Walter V. Brown, Manager; Chicago Office, 205 West Wacker Drive, 1216 Engineering Building, Chicago, Ill., A. Krauser, Manager; and San Francisco Office, 57 Post Street, Room 715, San Francisco, Calif., Newton D. Cook, Manager.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated except on request received after an interval of one month. Names and records will remain in the active files of the Service for a period of three months, and are renewable on request. Notices for *Proceedings* should be addressed to Employment Service, 31 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A bulletin of engineering positions available is published weekly and may be obtained by members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of 1½% of yearly salary; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the Service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Service after the positions to which they refer have been filled, will not be forwarded.

MEN AVAILABLE

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; graduate civil engineer; married. Fifteen years' general experience, specializing during later years on design and construction of sewerage and water systems, including treatment works and pumping stations. Now employed. Desires new connection with opportunity for growth. Available on reasonable notice. Location desired, Eastern States. A-466.

STRUCTURAL ENGINEER, Assoc. M. Am. Soc. C. E.; B. S. in C. E.; age 38; five

years, steel details; two years, Lieutenant in Army; eight years, design, steel and concrete. Present employers disbanding. Desires position as designing engineer, to design and to direct design and drawing. B-3203.

CONSTRUCTION SUPERINTENDENT OR RESIDENT ENGINEER, Assoc. M. Am. Soc. C. E.; age 41; single. Twenty years' experience on construction of hydro-electric and steam-electric plants, hotel and factory buildings, sewerage and water mains, street

paving, etc. In responsible charge of construction of above for fifteen years. Willing to go anywhere. B-6942.

PROMOTIONAL AND SALES MANAGER. Assoc. M. Am. Soc. C. E.; graduate civil engineer. Now promotional and sales manager for large manufacturer selling through city, county, State, and railroad engineers and officials. Ten years' experience, highway, railway, and contracting engineering, and six years promotional and sales. Desires to make change to similar connection or as district manager. B-8186.

STRUCTURAL AND HYDRAULIC ENGINEER. Assoc. M. Am. Soc. C. E.; age 42; married. Twenty-two years' experience, mostly on water-works, irrigation, flood control, and harbor projects of unusual magnitude, including investigations, design, and construction, with established qualifications as chief draftsman and office engineer. Location, anywhere. C-2350-91-A-4. San Francisco.

CIVIL ENGINEER. Jun. Am. Soc. C. E.; graduate. Experience in building construction on original layout and construction of apartment houses, theatres, and office buildings, with large building construction company. Desires position with contractor, architect, or consulting engineer in New York, or vicinity. C-3233.

JUNIOR CIVIL ENGINEER. Jun. Am. Soc. C. E.; graduate; age 24; married; with two and one-half years' experience in construction and general engineering work, desires permanent connection with construction firm or in the construction department of an industrial company. C-3439.

CIVIL ENGINEER. Assoc. M. Am. Soc. C. E.; University graduate; single; age 42; native born. Speaks, reads, and writes French. Fourteen years' broad and varied experience on construction of large earth masonry dams, hydro-electric developments, and industrial buildings. Honest, capable, and steady, open for engagement on short notice. Location, immaterial. Willing to go anywhere. C-4023.

STRUCTURAL ENGINEER. Assoc. M. Am. Soc. C. E.; graduate civil engineer; American citizen; age 33. Eleven years' experience in detailing, design, and erection of steel mill, office buildings, and bridges; eight years responsible charge of design; accustomed to deal with architects and owners; wishes to locate in or near Philadelphia. Desires permanent, responsible position. Good personality, executive ability. C-4186.

INSTRUMENTMAN OR JUNIOR ENGINEER. Jun. Am. Soc. C. E.; 1927 graduate in civil engineering from recognized four-year college; age 23. One and one-half years' experience as rodman and instrumentman on highway location and construction jobs. Prefers municipal or sanitary engineering. C-4719.

CIVIL ENGINEER. Jun. Am. Soc. C. E.; engineering graduate; age 28; married. Two years' experience in railroad construction; one and one-half years in railroad maintenance of large Eastern trunk line, desires position with contractor or construction engineer; prefers field work. No preference as to location. C-4993-1942. Chicago.

CIVIL ENGINEER. Jun. Am. Soc. C. E.; 1925 graduate; age 27; married. Design and construction; one year, machine shop work and drafting; three and one-half years, highway engineering, field and office. Prefers engineering work other than highway. Location, Middle West or South. C-5293.

GRADUATE CIVIL ENGINEER. Jun. Am. Soc. C. E.; age 28. Six years' experience on construction of interstate vehicular tunnel; field work on survey party, heading and concrete inspection; office engineer, computations, drawings, records of all kinds, all estimates. Adaptable to new work. Location preferred, East. C-5294.

CIVIL ENGINEER. Jun. Am. Soc. C. E.; graduate, Mass. Inst. Tech.; age 27; married. Four years' experience, location, design, and construction of highways. One year, land development, irrigation, drainage, and flood control in South America. Available at once. Location immaterial. C-5369.

CIVIL ENGINEER. M. Am. Soc. C. E.; C. E. degree. Experienced by responsible employment with contractors, engineering firms, municipal, State, and Federal governments. Topographical, hydrographical, soil and cadastral surveys; irrigation, drainage, diking, and river control; power, reservoirs, and hydro-electric developments; reinforced concrete design of bridges and municipal works. Reports, design, and construction. C-5393.

CIVIL ENGINEER. American; graduate from Delft University; married. Eight years' experience as superintendent, expeditor, estimator, and job runner, apartment house, mill, bank, lofts, and hotel buildings, desires position with general contractor. Willing to go anywhere. Speaks French, German, Dutch, and a little Spanish. C-5430.

CIVIL ENGINEER. Assoc. M. Am. Soc. C. E. and Western Society of Engineers; age 36; single. Fifteen years' general engineering experience, construction and contracting, estimating, costs, general supervision. Desires connection with architect, contractor, or consulting engineer in St. Louis, Mo., or Chicago, Ill. C-5458.

CIVIL ENGINEER. Jun. Am. Soc. C. E.; B. S., C. E. degrees; age 27; married. Licensed Engineer, New Jersey. Six years' construction experience, including three years, assistant plant engineer, large industrial corporation, active charge, surveys, design, construction, maintenance of buildings, roads, railroads, sewers, water supply, general plant improvements. Desires responsible position, construction company, consulting engineer, or progressive industrial plant. C-5472.

INDUSTRIAL AGENT OR COMMISSIONER. M. Am. Soc. C. E.; University graduate, former instructor. Industrial surveys and reports for purpose of developing local opportunities and new industries. Twenty years' responsible engineering work with railroads, industries, and municipalities. Some organization experience. Will accept secretarial or other position where major portion of time may be devoted to "new industry" problems. C-5494.

CIVIL ENGINEER. M. Am. Soc. C. E.; age 39; for past five years, construction engineer and superintendent for large oil

company, desires change as present position has no future possibilities. Experienced on difficult railroad location; railroad and highway construction; topographic surveys; planning and building of industrial plants. Available on reasonable notice. South American location preferred. C-5523.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; M. Sc. degree, structural engineering; age 32; married. One and one-half years' experience in surveying and road construction; one year on intercepting sewer; three years on large sewage treatment plant construction; and fifteen months on detailing and design of reinforced concrete structures. Desires position with contractor on design and construction. C-5536.

STRUCTURAL ENGINEER, Jun. Am. Soc. C. E.; desires to return to the Pacific Coast; graduate of the University of Washington; married. Two and one-half years, detailing structural steel mill and

office buildings; one year, design and checking of reinforced concrete work. Desires permanent position. Now employed. C-5539.

HYDRAULIC ENGINEER, M. Am. Soc. C. E.; graduate and post-graduate; age 43; married. Eighteen years' experience, involving hydrography, reclamation, flood control studies, and hydro-electric development. Now employed as hydraulic engineer on a major, but somewhat inactive, hydro-electric development. Interested in more active developments, more work, increased salary, and higher executive position. C-5560.

CIVIL ENGINEER, M. Am. Soc. C. E.; Twenty years' experience, design, construction, supervision, investigations, reports, consultation, on port and harbor works, canals, water and rail terminals, railroads, industrial plants, foundations, water-front and miscellaneous structures, buildings, etc. B-7393.

Membership

(From January 4 to February 5, 1929)

Additions

MEMBERS	Date of Membership.	
ALBERT, John Earl. Vice-Pres. and Gen. Mgr., Subsidiary Co. of Associated Public Utilities Corporation, 509 Wheeling Bank & Trust Bldg., Wheeling, W. Va.	Jun.	Aug. 9, 1920
ANDERSEN, Aksel Paull. Asst. Engr. of Design, Bridge Dept., The Port of New York Authority, 75 West St., New York (Res., 67-127 Clyde St., Forest Hills), N. Y.	Assoc. M.	Jan. 14, 1929
ANDREWS, Eric Alexis. Asst. Engr., Dept. of Public Works, Municipal Bldg. (Res., 85 Rockledge Ave.), White Plains, N. Y.	M.	Jan. 19, 1925
ARRIAGADA, Carlos Guillermo. Engr., Intendencia de Aysen, Santiago de Chile, Chile.	M.	Jan. 14, 1929
BABCOCK, Charles Irving. Care, Fred T. Ley & Co., Casilla 3843, Santiago de Chile, Chile.	Jun.	Dec. 3, 1928
BAUER, Clifford William. Field Engr., Public Service Production Co., Roseland (Res., 135 Sunset Lane), Tenafly, N. J.	Jun.	Nov. 12, 1928
BEAN, Alton L. Civ. Engr. and Surv.; City Engr., City of Huntington Park, 662 I. W. Hellman Bldg., Los Angeles, Calif.	Jun.	Dec. 3, 1928
BEER, Robert Augur. Res. Engr., The J. E. Greiner Co. (Res., 1038 North Calvert St.), Baltimore, Md.	Assoc. M.	Nov. 12, 1928
BEINHAUER, Frank Hugh. 3359 Warren Ave., Apartment 3, Chicago, Ill.	Assoc. M.	Nov. 12, 1928
BEREA, Alexander, Jr. Office Engr. and Estimator, W. Horace Williams Co., Inc. (Res., 833 Howard Ave.), New Orleans, La.	Jun.	Dec. 3, 1928
BETTS, Clifford Aull. Cons. Civ. Engr. (Betts Eng. Co.), 705 James Bldg. (Res., Dallas Heights, North Chattanooga, Chattanooga, Tenn.	Jun.	Oct. 21, 1924
BIDDLE, Charles Chandlee. 6 Church St., Ossining, N. Y.	Assoc. M.	Jan. 14, 1929
BIGELOW, Walter Bell. Asst. to Constr. Supt., Kansas Gas & Elec. Co., Room 418 Sedgwick Bldg., Wichita, Kans.	Jun.	Sept. 12, 1916
BRANNAN, Thomas Warren. Laboratory Asst., State Highway Dept. (Res., 1417 Northwest Boulevard), Columbus, Ohio.	Assoc. M.	May 12, 1919
BREITHAUP, Philip William. Asst. Supt., Turner Constr. Co., Builders Bldg. (Res., 5633 Kenmore Ave.), Chicago, Ill.	M.	Jan. 14, 1929
BROWN, Forrest Jagger. Care, Alabama Power Co., Birmingham, Ala.	Jun.	Dec. 3, 1928
BROWN, Joseph Dunton. Real Estate Engr., Connecticut Light & Power Co., Waterbury Res., Southington), Conn.	Jun.	Nov. 12, 1928
BUTLER, Joe Beaty. Associate Prof., Civ. Eng., Dept. of Civ. Eng., School of Mines and Metallurgy, Univ. of Missouri, Box 547, Rolla, Mo.	Jun.	Jan. 14, 1929
CAMPBELL, Frank Bixby. Junior Engr., Whitman, Requardt & Smith (Res., 783 Myrtle Ave.), Albany, N. Y.	Assoc. M.	Jan. 14, 1929
CARCHIO, Ernest. Draftsman-Designer, T. E. Murray, 55 Duane St., New York, N. Y. (Res., 414 Park Ave., East Orange, N. J.)	Jun.	Aug. 28, 1922
CARTER, Leo Alexander. 5241 Eleventh, N. E., Seattle, Wash.	Assoc. M.	Mar. 16, 1925
CASE, John Gideon. Sheldon Court, Ithaca, N. Y.	M.	Jan. 14, 1929
CAVANAGH, William Curran, Jr. Asst. Engr., Port of Seattle, Box 1878, Seattle, Wash.	Jun.	July 16, 1928
CHRISTENSON, Elmer John. 314 West 6th St., Hastings, Minn.	Jun.	Oct. 1, 1928
COLTRIN, Kenneth Louis. Draftsman, Harland Bartholomew, Oakland (Res., 245a Upper Terrace, San Francisco), Calif.	Jun.	Jan. 14, 1929
CONDON, Arnold Layman. Draftsman, Kansas City South Ry., Kansas City (Res., 1715 Arlington Ave., Independence), Mo.	Jun.	Jan. 14, 1929
CONSOER, George Otto. Secy. and Chf. Designing Engr., Consoer, Older & Quinlan, Inc., 205 West Wacker Drive, Room 1700, Chicago Ill.	Jun.	July 16, 1928
CONTRERAS, Mariano Jesus. Salas a Caja de Agua 69, Caracas, Venezuela.	Jun.	Nov. 12, 1928
COOK, Robert. Engr., Eng. Dept., Lago Petroleum Corporation, Maracaibo, Venezuela.	Jun.	Nov. 12, 1928
COOKE, Charles Prentice. Gen. Contr. (Will F. Peck Co.) (Res., 4534 Melbourne Ave.), Los Angeles, Calif.	Jun.	Dec. 3, 1928
CORR, George Theodore. Designer, Cleveland Union Terminals Co. (Res., 2038 East 81st St.), Cleveland, Ohio.	M.	Jan. 14, 1929
COYKENDALL, Claud Carlisle. Administration Engr., State Highway Comm. (Res., 808 Ridgwood Ave.), Ames, Iowa.	Assoc. M.	Jan. 14, 1929
CROWLEY, Orville Wilfrid. Engr. Member, Iowa Boundary Comm.; Executive Secy. and Engr., Associated Gen. Contrs. of America, Central Branch, 710 S. and L. Bldg., Des Moines, Iowa.	Assoc. M.	Mar. 9, 1920
CROWN, Victor Max. Engr., Ulen & Co., Athens, Greece.	Assoc. M.	Apr. 19, 1920
	Jun.	Jan. 14, 1929
	Jun.	Aug. 9, 1920
	Assoc. M.	May 8, 1922
	M.	Dec. 3, 1928

MEMBERS—(Continued)

Date of
Membership.

DAVIS, Dwight Arlington. Designing Engr., Civ. and Hydr. Eng. Dept., Commonwealth Power Corporation (Res., 2003 Fourth St.), Jackson, Mich.....	Assoc. M.	Dec.	3, 1928
DAVIS, Sidney Lee. Office Engr., South Porto Rico Sugar Co., Ingenio Santa Fe, San Pedro de Macoris, Dominican Republic	Assoc. M.	Jan.	14, 1929
DAYTZ, Alexander Barnett. 176 First Ave., Phoenixville, Pa.....	Jun.	Nov.	12, 1928
DEAN, Anthony Porter. Chf. of Party, San Joaquin Light & Power Corporation, Fresno (Res., Wishon), Calif.....	Assoc. M.	Jan.	14, 1929
DICK, Albert. Structural Steel Designer for Borough Pres. of Manhattan, Municipal Bldg. (Res., 2800 University Ave.), New York, N. Y.....	Jun.	Jan.	17, 1921
	Assoc. M.	Jan.	14, 1929
DUNN, George Perry. Senior Civ. Engr., State Highway Dept. (Res., 339 Tyler St.), Trenton, N. J.....	Jun.	Jan.	14, 1929
FAULKNER, James David. Junior Civ. Engr., Eng. Dept., City of Los Angeles, City Hall (Res., 2516 Corralitas Drive), Los Angeles, Calif.....	Assoc. M.	Jan.	14, 1929
FEIN, Herman Theodore. 352 East Main St., Norristown, Pa.....	Jun.	Oct.	1, 1928
FISCHER, Victor William. 2995 Botanical Sq. East, New York, N. Y.....	Jun.	Jan.	14, 1929
FOX, Peter William. Concrete Detailer, Kalman Steel Co., 110 East 42d St. (Res., 2805 University Ave.), New York, N. Y.	Jun.	Oct.	1, 1928
FREITAG, Albert. Care, U. S. Bureau of Public Roads, Ellis Bldg., Phoenix, Ariz.....	Assoc. M.	Nov.	12, 1928
FRYE, Randall Everett. 187 Woodside Ave., Buffalo, N. Y.....	Jun.	Nov.	12, 1928
GILROY, Urban Burns. Care, U. S. Bureau of Fisheries, L. C. Smith Bldg., Seattle, Wash.....	Jun.	May	19, 1924
GOSLINER, Leo Samuel. Estimator, Barrett & Hilp (Res., 751 Third Ave.), San Francisco, Calif.....	Assoc. M.	Oct.	1, 1928
	Jun.	Nov.	12, 1928
HALL, Halbert Hugo. Instrumentman, C. & N. W. Ry., 217 Main St., Winona, Minn.....	Jun.	Oct.	1, 1928
HAWLEY, George William. Asst. Chf. Engr., East Bay Water Co., Oakland (Res., 2409 College Ave., Berkeley), Calif.....	Jun.	Sept.	2, 1914
	Assoc. M.	May	13, 1913
	M.	Jan.	14, 1929
HAYES, Morgan Dodge. With Community Water Service Co., 46 Cedar St., New York, N. Y. (Res., 43 Union St., Montclair, N. J.).....	M.	Jan.	14, 1929
HIGGINS, Thomas William. Engr., Technical Dept., Atlas Portland Cement Co., New York (Res., 978 Seventy-eighth St., Brooklyn), N. Y.....	Assoc. M.	Jan.	14, 1929
HULL, William Deloney. Engr., Telfair County Bond Comm., McRae, Ga.....	Assoc. M.	Mar.	11, 1919
	M.	Jan.	14, 1929
IRWIN, William Ellis Row. Field Engr., Day & Zimmermann, Gratersford (Res., Goshen Apartments, West Chester), Pa...	Assoc. M.	Jan.	14, 1929
JEFFERIS, Wayne Bennett. Asst. Supt., United Engrs. & Constructors, Inc., Box 380, Tuscaloosa, Ala.....	Assoc. M.	Aug.	27, 1928
JOHANNSEN, John Frederick. City Engr. and Street Supt. (Res., 1129 East Harvard St.), Glendale, Calif.....	M.	Jan.	14, 1929
JONES, Carlton Walter. Engr., Allegheny Ave., Towson, Baltimore, Md.....	Assoc. M.	Dec.	3, 1928
JORDAN, Robert Dawson. Div. Engr. in Chg., 2d Div., State Highway Dept., 916 Martin Bldg., Birmingham, Ala.....	Assoc. M.	Oct.	1, 1928
KUO, Tienpang. 369 Lexington Ave., New York, N. Y.....	Jun.	Nov.	12, 1928
LENDALL, Harry Nelson. Head, Civ. Eng. Dept., and Prof., Municipal and San. Eng., Rutgers Univ. (Res., 41 College Ave.), New Brunswick, N. J.....	M.	Jan.	14, 1929
LEWIS, Charles Edward. With Blawnox Co., Blawnox, (Res., 430 Biddle Ave., Wilkinsburg), Pa.....	Jun.	Oct.	1, 1928
LUCAS, William Robert. Insp., Dept. of Water Supply (Res., 2310 Glendale Ave.), Detroit, Mich.....	Jun.	Jan.	14, 1924
LYNCH, John Pescud. 309 West 109th St., New York, N. Y.....	Assoc. M.	Jan.	14, 1929
	Jun.	Dec.	3, 1928
MacCALLUM, Clarence. Cons. Engr., 17 Battery Pl., New York, N. Y.....	M.	Jan.	14, 1929
McCOY, Milton Howard. (McCoy & Mulford), 1541 Chicago Rd. (Res., 209 West 16th St.), Chicago Heights, Ill.....	M.	Jan.	14, 1929
McCULLOUGH, Stirling Enoch. Box 451, Waco, Tex.....	Assoc. M.	Jan.	14, 1929
McINTOSH, William Roscoe. Asst. Prof., Civ. Eng., Speed Scientific School, Univ of Louisville (Res., 2400 Woodbourne Ave.), Louisville, Ky.....	Assoc. M.	Jan.	14, 1929
McLEAN, Norman. Box 316, San Diego, Calif.....	Assoc. M.	Aug.	27, 1928
MARCROFT, John Clifford. Junior Civ. Engr., U. S. Navy, U. S. Naval Station, Guantanamo Bay, Cuba.....	Jun.	Dec.	3, 1928
MARTINEZ, Adrian Antonio. With George Wagner, 181 South Park (Res., 2195 Sacramento St.), San Francisco, Calif.....	Assoc. M.	Jan.	14, 1929

MEMBERS—(Continued)		Date of Membership.	
MATHEWS, James Thomas. Lt.-Commander, C. E. C., U. S. N.; Public Works Officer, U. S. Submarine Base, New London, Conn.....	Assoc. M.	Nov. 12, 1928	
MILES, Raymond Thomas. Junior Asst. Engr., State Highway Dept.; 60 Fire Island Ave., Babylon, N. Y.....	Jun.	Jan. 14, 1929	
MILLER, Hiram. Asst. Hydr. Engr., Elec. Bond & Share Co., 2 Rector St., New York, N. Y.....	Assoc. M.	Jan. 5, 1929	
MISCH, Franz Martin. Asst. Engr., Am. Toll-Bridge Co., Crockett (Res., 1431 Portland Ave., Berkeley), Calif.....	Jun.	Nov. 12, 1928	
MOORE, John Marion. 335 Highland Ave., Jackson, Tenn.....	Jun.	Oct. 1, 1928	
MORGAN, Nathan Wilson. Highway Bridge Engr., U. S. Bureau of Public Roads, Montpelier, Vt.....	Assoc. M.	April 3, 1922	
MOSELEY, Harry Heber. Care, George B. Gascoigne, 1149 Leader Bldg., Cleveland, Ohio.....	M.	Jan. 14, 1929	
MOULTON, George Lewis. Prin. Asst. State Highway Engr., State Highway Dept., Montgomery, Ala.....	Jun.	Nov. 12, 1928	
MULFORD, Edgar Theodore. Engr. (McCoy & Mulford), 1541 Chicago Rd., Chicago Heights, Ill.....	Assoc. M.	Mar. 16, 1925	
MYERS, John Burton. Chf. Engr., Simon & Simon, Philadelphia, Pa. (Res., 12 Hollywood Circle, Merchantville, N. J.).....	M.	Jan. 14, 1929	
NEELY, John Lee, Jr. Asst. Div. Engr., State Highway Dept., Nashville (Res., Franklin), Tenn.....	Assoc. M.	Jan. 14, 1929	
NORDGREN, Paul Amandus. North Branch, Y. M. C. A., Highland Park, Mich.....	Jun.	Oct. 1, 1928	
O'FARRELL, John Joseph. Box 101, White Sulphur Springs, W. Va.....	Jun.	Dec. 3, 1928	
OLIVER, Warren Houdlette, Jr. 456 Orange St., Macon, Ga.....	Jun.	Jan. 14, 1929	
PACE, Nat. Maintenance Engr., Baytown Refinery, Humble Oil & Refining Co., Box 132, Baytown, Tex.....	Assoc. M.	Nov. 12, 1928	
PALMER, William Roy. Cons. Engr., 33 West 42d St., New York (Res., New South Rd., Hicksville), N. Y.....	M.	Jan. 14, 1929	
PARKER, Andrew. Archt.'s Representative, O. S. Schlich, 136 Liberty St. (Res., 143 West 74th St.), New York, N. Y.....	Assoc. M.	Jan. 14, 1929	
PENNOYER, Raymond Palmer. Structural Engr., Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.....	Assoc. M.	Nov. 12, 1928	
PERRAULT, Roland Clarence. Junior Engr., Port of New York Authority (Res., 3089 Broadway, Apartment 67), New York, N. Y.....	Jun.	Dec. 3, 1928	
PHILLIPS, Reginald Frank. Engr., Egleston Bros., 539 Borden Ave., Long Island City (Res., 3432 Ninety-first St., Jackson Heights), N. Y.....	Assoc. M.	Aug. 27, 1928	
PIKE, Merritt Lemuel. Thorofare, N. J.....	Jun.	Oct. 1, 1928	
PITTMAN, Everette Edward. Office Engr., State Highway Dept. (Res., 2821 Salado St.), Austin, Tex.....	Assoc. M.	Jan. 14, 1929	
PULS, Louis George. Care, Hugh L. Cooper & Co., 101 Park Ave., New York, N. Y.....	Jun.	June 6, 1921	
	Assoc. M.	Dec. 3, 1928	
QUADE, Charles Omar. Draftsman, Dwight P. Robinson, Inc. Res., 6358 San Bonita Ave., St. Louis, Mo.....	Jun.	Nov. 12, 1928	
RAIT, Donald DeWitt. Designing Engr. Hydr. Dept., Aluminum Co. of America (Res., 6958 Kelly St.), Pittsburgh, Pa.....	Assoc. M.	Jan. 14, 1929	
RAPP, Homer Marshall. 8022 Kingsbury Boulevard, Clayton, Mo. RECTOR, Nelson Hamilton. San. Engr., State Board of Health (Res., 134 Elm St.), Clarksdale, Miss.....	Jun.	Nov. 12, 1928	
REESE, Marshall Hudson. Care, U. S. Coast and Geodetic Survey, Steamer <i>Lydonia</i> , Jacksonville, Fla.....	Assoc. M.	Nov. 12, 1928	
RENARD, Eugene Charles. Civ. Engr., City of St. Louis (Res., 327 North Taylor Ave.), St. Louis, Mo.....	Jun.	Jan. 14, 1929	
RICHARDSON, Arthur Leland. Asst. Constr. Engr., State Highway Comm., Bridge Dept., Sacramento, Calif.....	Assoc. M.	Jan. 14, 1929	
ROBERTS, Claude Oliver. 1083 Fourteenth St., Boulder, Colo.....	Jun.	Oct. 1, 1928	
ROOP, Wendell Prescott. Lieut., Constr. Corps, U. S. N., U. S. Experimental Model Basin, Navy Yard, Washington, D. C.....	M.	April 23, 1928	
SCROGGIN, Joseph Council. Junior Highway Engr., Div. of Highways (Res., 410 West Oak St.), Carbondale, Ill.....	Jun.	Dec. 3, 1928	
SEABRIGHT, Ralph William. Junior Engr., State of Illinois Div. of Highways (Res., 1217 West Washington St.), Springfield, Ill.....	Jun.	Nov. 12, 1928	
SHEDDAN, William Eakin. City Engr. (Res., 2056 Ernest St.), Jacksonville, Fla.....	M.	Jan. 14, 1929	
SKOV, Robert Lawrence. 5617 Ocean View Drive, Oakland, Calif.....	Jun.	Nov. 12, 1928	
SPECHT, Casper Lawrence. Civ. Engr., New York, (Res., 2516 Bedford Ave., Brooklyn), N. Y.....	Jun.	May 8, 1922	
STAMAN, Lilburn Pierce. Box 11, Fair Oaks, Pa.....	Assoc. M.	Aug. 27, 1928	
STAPLES, Eugene LeForest. 640 West 139th St., Apartment 69, New York, N. Y.....	Jun.	Nov. 12, 1928	
	Jun.	July 16, 1928	

MEMBERS—(Continued)

		Date of Membership.
STERLING, Clarence Irving, Jr.	Senior San. Eng. Ald. State Dept. of Public Health, Boston (Res., 685 Centre St., Newton), Mass.	Jun. Oct. 1, 1928
STUMPF, Richard Thomas.	Chf. of Field Party, James H. Fuertes, Linden, N. J. (Res. 1411 Ave. I, Brooklyn, N. Y.)	Jun. Jan. 14, 1929
TARBELL, Harold Leon.	East Freetown, N. Y.	Jun. Oct. 1, 1928
THOMASSEN, Victor Gifford.	Asst. Engr., Am. Bridge Co., 30 Church St., New York (Res., 97 Columbia Heights, Brooklyn), N. Y.	Assoc. M. Jan. 19, 1920 M. Jan. 14, 1929
THOMPSON, Maxwell Hine.	513 Thompson St., Ann Arbor, Mich.	Jun. Dec. 3, 1928
THORNBLE, Herbert Fred.	9 Minetta St., New York, N. Y.	Jun. July 16, 1928
TRAPP, Arthur John.	Constr. Engr., Dept. of Water Supply, 39 Cottage St., Pontiac, Mich.	Jun. July 16, 1928
WALLER, Laurence John.	Cons. Engr., 931 Micheltorena St., Los Angeles, Calif.	Assoc. M. May 28, 1923 M. Jan. 14, 1929
WALTER, Henry Wesley.	Sales Engr., Bethlehem Steel Corpora- tion, 39 Wardman Rd., Kenmore, N. Y.	Assoc. M. Jan. 14, 1929
WARDEN, Thomas Benjamin.	Engr.-Mgr., Gulf Coast Good Roads Assoc., 1011 Chronicle Bldg., Houston, Tex.	Assoc. M. Dec. 3, 1928
WATSON, Harold Harry.	Gen. Constr. Supt., Byllesby Eng. & Man- agement Corporation, Care, San Diego Consolidated Gas & Elec. Co., San Diego, Calif.	Assoc. M. Jan. 14, 1929
WENTWORTH, Charles Ruschenberger.	Squad Leader, Eng. Dept., Virginia Bridge & Iron Co., Box 744, Roanoke, Va.	Jun. Sept. 12, 1921 Assoc. M. Jan. 14, 1929
WHITE, John Lester.	Parish Engr., Highway Dept., Morehouse Parish (Res., Hickory St.), Bastrop, La.	M. Jan. 14, 1929
WRIGHT, William Theodore.	4532 Nineteenth Ave., N. E., Seattle, Wash.	Jun. Dec. 3, 1928
YASINES, Stan Franz.	Instr. in Surveying, Coll. of Eng., New York Univ. (Res., 11 West 121st St.), New York, N. Y.	Jun. Jan. 14, 1929
YEAGER, Oswald Karl.	Owner and Gen. Mgr., Yeager & Sons (Res., 440 North Gilbert St.), Danville, Ill.	M. Jan. 14, 1929

Reinstatements

MEMBERS	Date of Reinstatement
BARBER, Norman Nathaniel	Jan. 14, 1929
VAN SUETENDAEL, Achille Octave	Jan. 14, 1929

ASSOCIATE MEMBERS

BENSON, Charles Greenwood	Jan. 14, 1929
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AFFILIATES

MORRISON, Henry Craig	Jan. 14, 1929
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JUNIORS

KUNZ, John Frederick	Jan. 14, 1929
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Resignations

MEMBERS	Date of Resignation
AUSTIN, William Eugene	Jan. 14, 1929
MANN, John Laroy	Jan. 14, 1929
SCHROEDER, Christoffer	Jan. 14, 1929

ASSOCIATE MEMBERS

MYERS, John Henry	Jan. 14, 1929
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AFFILIATES

DALTON, Harry Franklin	Jan. 14, 1929
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JUNIORS

FREEMAN, Raymond Allison	Jan. 14, 1929
MOODIE, Robert Wardwell	Jan. 14, 1929
RIEFFEL, Marc Aurèle	Jan. 14, 1929

Deaths

- ANGIER, Walter Eugene. Elected Associate Member, September 7, 1892; Member, September 3, 1902; died December 31, 1928.
- BRIER, William Wallace. Elected Member, October 21, 1924; died December 28, 1928.
- BURT, Luther Harold. Elected Associate Member, November 1, 1910; Member, April 2, 1913; died January 29, 1929.
- HAYDEN, William Wallace. Elected Member, November 6, 1895; died January 7, 1929.
- KLUEGEL, Charles Henry. Elected Member, October 1, 1902; died January 10, 1929.
- LUCIUS, Albert. Elected Member, March 3, 1886; died February 2, 1929.
- MACY, Frederick Oliver. Elected Junior, October 1, 1928; died December 6, 1928.
- MCCOMB, David E. Elected Member, February 7, 1877; died January 27, 1929.
- MULLEN, Charles Ward. Elected Member, September 11, 1917; died May 18, 1928.
- O'CONNOR, Cornelius. Elected Junior, March 1, 1904; Associate Member, June 5, 1907; died January 29, 1929.
- PIERCE-HOPE, John. Elected Member, December 5, 1906; died September, 1927.
- ROBINSON, Albert Fowler. Elected Member, November 2, 1887; died January 20, 1929.
- SEAMAN, William Laurie. Elected Junior, October 14, 1919; Associate Member, November 15, 1926; died August 14, 1928.
- SPEER, Carl, Jr. Elected Junior, March 14, 1927; died January 18, 1929.
- STICKNEY, George Fetter. Elected Junior, May 1, 1894; Associate Member, April 5, 1899; Member, September 4, 1906; died January 27, 1929.
- TUTHILL, Job. Elected Junior, June 6, 1888; Member, October 4, 1893; died December 28, 1928.
- WELLER, Francis Repetti. Elected Junior, February 5, 1901; Associate Member, November 1, 1905; Member, April 30, 1912; died January 13, 1929.

Total Membership of the Society, February 5, 1929

Members	5 566
Associate Members	5 900
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Corporate Members	11 466
Honorary Members	16
Juniors	2 033
Affiliates	138
Fellows	7
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Total	13 660